

982-D-7 TD 8.12: 983

A Report on Activities Under the
National Traffic and Motor Vehicle
Safety Act of 1966 and the
Motor Vehicle Information and
Cost Savings Act of 1972

COMPLETED

181

Motor Vehicle Safety 1983

January 1, 1983 - December 31, 1983
U.S. DEPARTMENT OF
TRANSPORTATION
National Highway Traffic
Safety Administration

ORIGINAL



U.S. Department of Transportation
National Highway Traffic Safety
Administration

BEST COPY AVAILABLE

MOTOR VEHICLE SAFETY 1983

A Report on Activities Under the Motor
Vehicle Safety Act of 1966
January 1, 1983 - December 31, 1983

I

BEST COPY AVAILABLE

BLANK PAGE

CONTENTS

	Page
Introduction	1
The Motor Vehicle Safety Problem	1
Trends	1
Program Emphasis	2
 Saving Lives	 9
Occupant Protection	9
Child Safety Seats	10
Automatic Protection	11
Frontal Impact Protection	12
Side Impact Protection	12
Pedestrian Impact Protection	13
Engineering Analysis	13
Biomechanics	13
Review of Regulatory Actions	14
Crashworthiness Rulemaking	14
Scientific and Technical Conferences and Workshops	15
 Avoiding Accidents	 25
Visibility and Vehicle Conspicuity	25
Lighting	26
Vehicle Identification Number	27
Power Windows	27
Controls and Displays	27
Brakes	27
Handling and Stability	28
Heavy Truck Safety Research	28
Vehicle Research and Test Center	29
 Fuel Economy	 31
Fuel Economy Enforcement	31
 Enforcement	 35
Safety Defects	35
The Investigative Process	35
1983 Recalls	36
Inquiries, Engineering Analyses and Formal Defect Investigations	37
Recall Audits	37
Vehicle Safety Compliance	37
Compliance Testing	38
Child Restraint Systems	39
Odometer Tampering	39

CONTENTS (CONTINUED)

	Page
Imported Motor Vehicles	39
Litigation	40
Administrative Enforcement	41
 Consumer Activities	 43
Bumpers	43
Auto Safety Hotline	43
Uniform Tire Quality Grading	44
Tire Registration	44
New Car Assessment Program	45
Consumer Information Regulations	45
Public Affairs/Consumer Outreach	48
 Support for Motor Vehicle Safety	 51
National Center for Statistics and Analysis	51
Harmonization of Regulations	55
 Administration	 57
Management Improvements	57
Civil Rights	57

TABLES

1. 1983 Traffic Fatality Summary	2
2. Trends in Motor Vehicle Traffic Deaths in the United States 1961 - 1970, 1972, 1974-83	3
3. Important Fatality Changes from 1982 to 1983	4
4. National Highway Traffic Safety Administration Historical and Legislative Background	5
5. List of Federal Motor Vehicle Safety and Fuel Economy Standards and Regulations in Effect in Calendar Year 1983	16
6. 1983 New Car Assessment Program Crash Test Results	46
7. Data Acquisition and Statistical Analysis	52
8. National Highway Traffic Safety Administration Organizational Chart	58

CONTENTS (Continued)

	Page
<u>APPENDICES</u>	
A. Statistical Compilation	
B. Funding Tables	A-1
C. Research Notes	B-1
D. Publications of the National Highway Traffic Safety Administration	C-1
E. Major Research Projects Performed for NHISA Under Contracts That Utilized FY 1983 Funds	D-1
	E-1

Introduction

The National Highway Traffic Safety Administration (NHTSA) was established by the Highway Safety Act of 1970, as the successor to the National Highway Safety Bureau, to carry out programs under the National Traffic and Motor Vehicle Safety Act of 1966 and the Highway Safety Act of 1966. It also carries out programs established by the Motor Vehicle Information and Cost Savings Act of 1972 and the Energy Policy and Conservation Act of 1975.

It is responsible for reducing deaths, injuries, and economic losses resulting from motor vehicle damage. This is accomplished by setting and enforcing safety performance standards for motor vehicles, and through grants to state and local governments to enable them to organize, develop, and implement their highway safety programs more effectively. NHTSA investigates safety defects in motor vehicles, sets and enforces fuel economy standards, provides leadership to the states and local communities to reduce the threat of drunk drivers, promotes the use of safety belts and child safety seats, investigates odometer fraud, and provides consumer information on motor vehicle safety and the comparative crashworthiness of new cars. It also conducts research to demonstrate the relationship between driver skill and behavior and traffic safety, and to develop the most efficient and effective means of bringing about safety improvements.

The Motor Vehicle Safety Problem

Safer motor vehicle travel continues to be a prominent national concern, with government at all levels combining resources to find ways to reduce fatalities and injuries and their economic consequences.

When someone age 44 or younger dies in this country, it is more likely to be from a motor vehicle crash than from any other cause. While there is no "typical" motor vehicle accident, statistical profiles indicate that most involve a passenger car; occur on a principal roadway in a rural area, and during normal weather conditions; and more drivers are killed than passengers.

Alcohol continues to be the single greatest cause of traffic accidents and is involved in at least half of all traffic fatalities. Also, failure to use the safety belts that are in nearly every passenger car on the road today results in nearly twice as many fatalities and injuries than would otherwise occur in these vehicles.

The economic cost of motor vehicle accidents is conservatively estimated to be \$57 billion each year¹ broken down as follows: property damage, about \$21 billion; lost productivity, \$14 billion; medical costs, \$3 billion; and nearly \$19 billion in insurance expenses, legal and court fees, emergency services, coroner/medical examiner costs, and the administrative expenses of public assistance programs.

Trends

The 1983 nationwide traffic death toll was the lowest in 20 years, continuing a downward trend that began in 1981. A total of 42,584 persons lost their lives in traffic accidents in 1983, a three percent decrease from the 43,945 killed in 1982.

There was an even more dramatic improvement in the fatality rate, the number of deaths per 100 million vehicle miles of travel. This rate, which is a

¹ Estimate based on 1980 data. Total economic cost may be slightly different in 1983 due to decreased fatality and injury incidence.

measure of the risk of death that a person is exposed to when travelling by motor vehicle, declined to 2.6 in 1983 — the lowest fatality rate ever recorded. This was a 7 percent improvement over the 2.8 rate in 1982 and 21 percent better than in 1980 when the rate was 3.3.

Table 1.
1983 Traffic Fatality Summary

Occupants of Passenger Cars	22,976
Occupants of Vans, Pickups, and Multipurpose Vehicles	6,163
Occupants of Heavy Trucks	807
Occupants of School Buses	17
Motorcyclists	4,264
Pedestrians	6,824
Pedalcyclists	839
Occupants of Other Vehicles	694

This reduction in the fatality rate is significant when viewed from a historical perspective. In 1940, 32,914 persons were killed as a result of 302.2 billion miles of travel and the fatality rate that year was 10.9. By 1961, the rate had decreased to 4.9, but the downward trend reversed in 1962 and began increasing. In 1966, when legislation was passed to create a federal traffic safety program, there were nearly 96 million motor vehicles on the road and the fatality rate had climbed to 5.5. In 1983, with travel at 1.655 trillion vehicle miles and fatalities at 42,584, the fatality rate of 2.6 deaths per 100 million vehicle miles is the lowest it has been since at least the early 1920's when the first records were kept on miles travelled in a given year. If the relative risk of driving in 1983 had

been the same as in 1940 when the fatality rate was 10.89, we would have experienced as many as 180,230 traffic deaths in 1983.

The substantially reduced risk of death or injury per mile of travel can be attributed to many factors, including safety improvements in motor vehicles and roadways, reduced speeds, safety belt and child safety seat use, improved traffic law enforcement and emergency medical services, and increased national awareness of the dangers of drunk driving.

Program Emphasis

Improving the safety of motor vehicle travel ranks among the most critical public health issues facing the nation today. NHTSA continued to meet its statutory obligation to improve motor vehicle safety through regulatory, enforcement, and public education programs that reduce deaths and injuries effectively and efficiently.

During 1983, the agency addressed motor vehicle safety with a three-part solution involving the vehicle, roadway, and driver, emphasizing activities with the most realistic prospects for success. Significant attention was paid to data collected by NHTSA and the states to measure progress and to identify shortcomings.

The highway safety portions of the agency's mission were stressed, primarily safety belt and child safety seat usage and mounting efforts to combat drunk driving. Alcohol abuse is the single greatest cause of motor vehicle accidents and is involved in at least half of all traffic fatalities. Similarly, failure to use safety belts contributes to nearly half of all fatalities and injuries in motor vehicle crashes.

The anti-drunk driving program advocated community-based alcohol programs and encouraged state and local governments and the private sector to

Table 2. Trends in Motor Vehicle Traffic Deaths in the United States
1961, 1970, 1972, 1974-1983

Item	1961	1970	1972	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Deaths	36,285	52,627	54,589	45,196	44,525	45,523	47,878	50,331	51,083	51,091	49,301	43,945	42,584
Motor Vehicle Travel (billion of vehicle miles)	737	1,110	1,260	1,281	1,328	1,402	1,467	1,545	1,529	1,528	1,556	1,592	1,655
Registered Motor Vehicles (100,000)	766	1,112	1,226	1,349	1,379	1,435	1,473	1,536	1,596	1,616	1,641	1,653	1,677
Resident Population (100,000)	1,830	2,040	2,093	2,133	2,155	2,176	2,198	2,221	2,246	2,272	2,293	2,315	2,340
Licensed Drivers (100,000)	887	1,115	1,184	1,254	1,298	1,340	1,381	1,408	1,433	1,453	1,471	1,503	1,520
Death Rates Per Hundred Million Vehicle Miles	4.92	4.74	4.33	3.53	3.35	3.25	3.26	3.26	3.34	3.34	3.17	2.76	2.57
Per 100,000 Registered Vehicles	47.37	47.31	44.54	33.50	32.28	31.73	32.51	32.76	32.01	31.62	30.04	26.59	25.39
Per 100,000 Resident Population	19.83	25.80	26.08	21.18	20.66	20.92	21.79	22.66	22.75	22.49	21.50	18.98	18.20
Per 100,000 Licensed Drivers	40.91	47.18	46.10	36.03	34.31	33.96	34.66	35.74	35.66	35.16	33.52	29.24	28.02
<u>Vehicle and Driver Relationship</u>													
Ratio, Registered Motor Vehicles to Licensed Drivers	0.86	1.00	1.03	1.08	1.06	1.07	1.07	1.09	1.11	1.11	1.12	1.10	1.10
Ratio, Registered Motor Vehicles to Resident Population	0.42	0.55	0.59	0.63	0.64	0.66	0.67	0.69	0.71	0.71	0.72	0.71	0.72
Ratio, Licensed Drivers to Resident Population	0.48	0.55	0.57	0.59	0.60	0.62	0.63	0.63	0.64	0.64	0.64	0.65	0.65

create comprehensive programs with swift, sure sanctions for drunk drivers. The Presidential Commission on Drunk Driving successfully completed its mandate to serve as the national focal point for efforts to reduce the incidence of drunk driving and to further encourage state and local efforts to deal with the issue. When the Commission term expired in 1983, its work was assumed by a new private organization, the National Commission on Drunk Driving.

The National Safety Belt Campaign continued to reach out to every age group with persuasive information on the lifesaving benefits of safety belts and child safety seats.

The agency also continued its research on improved motor vehicle safety technology. An expanded data collection and analysis capability has given NHTSA engineers a better understanding of what causes motor vehicle accidents and the kinds of human trauma that result. In the crash avoidance area, priority was placed on improvements in motor vehicle lighting and braking. Considerable attention was given to heavy truck braking since heavy vehicles are over-involved in fatal collisions. Frontal crash protection research priorities included improved steering columns, windshields, instrument panels, and frontal structures. In the side impact area, emphasis was on structural and padding modifications.

Enforcing the federal laws, standards, and regulations governing motor vehicles is one of NHTSA's most critical safety responsibilities. During the year, the enforcement emphasis was on providing the agency with improved capabilities to identify accurately safety-related defects in motor vehicles and equipment, and to ensure that defects are corrected in the shortest possible time.

The agency also completed a comprehensive review of its research projects.

Table 3.
Important Fatality Changes
From 1982 to 1983

- o The largest reductions occurred in the Southwest region and in the states of New York and New Jersey. The Northwest and Southeast showed small increases.
 - o Restraint usage in fatal accidents increased from 3 percent in 1980 to 5 percent in 1983 for passenger vehicle occupants. The increase was from 6 to 21 percent for children under age 6. Motorcycle helmet usage remained constant at about 41 percent.
 - o Accidents involving heavy trucks continued to account for about 10 percent of all traffic fatalities and for about 20 percent of all fatalities resulting from vehicle-to-vehicle crashes.
 - o Pedestrian and bicyclist fatalities decreased by 8 percent while the reduction in vehicle occupant fatalities was less than 3 percent.
 - o Driver fatalities dropped 3 percent. The reduction was 7 percent for drivers under age 25 and less than 2 percent for other ages. Drivers 65 years of age or older showed a 3 percent fatality increase. Male driver fatalities decreased by 4 percent, while female driver fatalities increased by 3 percent.
 - o Fatalities decreased more on weekends (6 percent) than on weekdays (2 percent).
 - o During nighttime hours (6 p.m. to 6 a.m.) fatalities decreased by 7 percent; they rose 2 percent during the remaining 12 hours.
-

The result was the "1983 Safety Priorities Plan," which embodied a balance between motor vehicle and highway safety activities, considered the broad range

of solutions, and presented various approaches to reducing traffic casualties.

Table 4. National Highway Traffic Safety Administration
Historical and Legislative Background

Year	Traffic Fatalities	Public Law
1924 to 1966	18,400 50,894	Federal Government organizations concerned with highway safety: Department of Health, Education and Welfare Department of Commerce Post Office Department Department of Defense General Services Administration Interstate Commerce Commission Interdepartmental Highway Safety Board President's Committee for Highway Safety
1924	18,400	National Conference on Street and Highway Safety (convened by Secretary of Commerce, Herbert Hoover)
1937	37,819	Second National Conference on Street and Highway Safety Report, <u>Guides to Traffic Safety</u>
1946	31,874	Third National Conference produced an Action Program for Highway Safety.
1954	33,890	The President's Committee for Traffic Safety established and adopted the Action Program.
1956	37,965	First Congressional interest: Subcommittee Health and Safety of the House Committee on Interstate Commerce
1958	35,331	Secretary of Commerce authorized to assist in carrying out the President's Action Program and to cooperate with the States in furthering highway safety. Interstate Compacts for Traffic Safety (Beamer Resolution)
		P.L. 85-684
1959	36,223	Report by the Secretary of Commerce to Congress on magnitude of traffic safety problems and the role the Federal Government should play in attacking them

		Requirements for Passenger-Carrying Motor Vehicles Purchased for Use by the Federal Government to Meet Certain Safety Standards	P.L. 85-515
		Prohibition of Use in Commerce of Any Motor Vehicle Which Discharges Substances in Amounts Found by the Surgeon General to Be Injurious to Human Health	P.L. 86-493
1960	36,399	Registration of Automobile License Revocations (National Driver Register)	P.L. 86-660
		Amendments	P.L. 87-359
		Amendments	P.L. 89-563
1961	36,285	Requirements for Passenger-Carrying Motor Vehicles for Use by the Federal Government to Meet Certain Safety Standards	P.L. 88-515
		Hydraulic Brake Fluid Specifications	P.L. 87-637
1962	38,980	Standards for Automobile Seat Belts Sold or Shipped in Interstate Commerce	P.L. 88-201
1965	47,089	Amendment to the Federal-Aid Highway Act providing for Voluntary State Highway Safety Standards (Baldwin Amendment)	P.L. 89-139
1966	50,894	National Traffic and Motor Vehicle Safety Act of 1966 established the National Traffic Safety Agency in the Department of Commerce.	P.L. 89-563
		Highway Safety Act of 1966 established the National Highway Safety Agency in the Department of Commerce.	P.L. 89-564
		Department of Transportation Act of 1966	P.L. 89-670
1970	52,627	National Traffic and Motor Vehicle Safety Act of 1966, amendments	P.L. 91-265
		Federal-Aid Highway Act of 1970, created National Highway Traffic Safety Administration.	P.L. 91-605

Report of the President's Task Force on
Highway Safety: Mobility Without Mayhem

1972	54,589	Motor Vehicle Information and Cost Savings Act	P.L. 92-513
		National Traffic and Motor Vehicle Safety Act Amendments of 1972	P.L. 92-548
1973	54,052	Federal-Aid Highway Act of 1973	P.L. 93-87
1974	45,196	Motor Vehicle and Schoolbus Safety Amendments of 1974	P.L. 93-492
1975	44,525	Federal-Aid Highway Amendments of 1974	P.L. 93-643
		Energy Policy and Conservation Act established the Automotive Fuel Economy Program by adding a new Title V to the Motor Vehicle Information and Cost Savings Act.	P.L. 94-163
1976	45,523	Federal-Aid Highway Act of 1976	P.L. 94-280
		National Traffic and Motor Vehicle Safety Act Amendment and Authorization	P.L. 94-346
		Motor Vehicle Information and Cost Savings Act Amendments of 1976	P.L. 94-364
1977	47,878	Auto Fuel Economy Program amendment, contained in the Department of Energy Organization Act	P.L. 95-91
1978	50,331	Highway Safety Act of 1978 (included as Title II of the Surface Transportation Assistance Act of 1978); also includes an amendment to Section 158(b) of the National Traffic and Motor Vehicle Safety Act of 1966.	P.L. 95-599
		Auto Fuel Economy Program amendments, contained in the National Energy Conservation Policy Act.	P.L. 95-619
1980	51,091	Automobile Fuel Efficiency Act of 1980 amending Title V of the Motor Vehicle Information and Cost Savings Act	P.L. 96-425

1981	49,301	Omnibus Budget Reconciliation Act of 1981, P.L. 97-35 Title XI, Sections 1107-1109 amending the Highway Safety Act	
1982	43,945	Motor Vehicle Safety and Cost Savings Authorization Act of 1982	P.L. 97-331
		Alcohol Incentive Grant Program and National Driver Register Improvements	P.L. 97-364
1983	42,584	Highway Safety Act of 1982 (included as Title II of the Surface Transporta- tion Assistance Act of 1982)	P.L. 97-424

Source: Fatalities: 1924-74, National Center for Health Statistics, HEW, and State annual summaries (adjusted to 30-day deaths). 1975-1983, Fatal Accident Reporting System (FARS) NHTSA.

- * Traffic fatalities are deaths from motor vehicle accidents occurring on trafficways. Statistics represent deaths occurring within 30 days after the date of the accident, which constitute approximately 98 percent of all traffic deaths.

Saving Lives

If the fatality rate has been reduced significantly because of safer roadways, improvements in the design of motor vehicles and better informed and trained drivers, why is the annual motor vehicle casualty toll still so high? The answer is relatively simple but the solutions are very complex. There have been large increases in people, drivers, motor vehicles, and travel. Over the last decade, population increased by 12 percent, motor vehicles by 37 percent, drivers by 28 percent, and travel by 32 percent. During this same period, the ratio of vehicles to population increased by 22 percent, and the ratio of licensed drivers to population increased from 57 percent to 65 percent. In addition, although we are beginning to see a change, American social mores continued to approve tacitly of drinking and driving, notwithstanding the fact that alcohol is involved in at least half of the fatal motor vehicle crashes each year.

In setting priorities for 1983, NHTSA chose three criteria for evaluating safety priorities: the magnitude of the safety problem; the potential safety benefits; and the consequences of alternative courses of action. By using these criteria to guide the selection of priority projects, the agency was able to concentrate its resources on projects that offered the most realistic promise of reducing deaths and injuries.

Motor vehicle safety standards and regulations were reviewed to determine whether standards meet the statutory requirement of being "reasonable, practicable, appropriate" and that they "meet the need of motor vehicle safety," and further, whether the safety or consumer-related goals and policies established by Congress in its related legislation were being met.

In addition, NHTSA made improvements in its own data collection system and assisted the states to improve their systems to measure highway safety progress, identify shortcomings, and to determine which safety areas have the most promise for significant improvement.

NHTSA's accident data collection and analysis system was especially helpful in identifying priorities. For example, the agency's National Accident Sampling System (NASS) identified problem areas by providing a statistically representative sample of police-reported traffic accidents. The system has 50 teams operating nationwide and can investigate 12,000 accidents each year.

The agency also evaluated the cost of regulated safety features, considering NHTSA data along with information supplied by the automotive industry to the Bureau of Labor Statistics, and published the "Economic Cost to Society of Motor Vehicle Accidents." Based on this information, NHTSA continued to estimate that changes made since 1968 to meet federal safety standards cumulatively amount to about \$370 per vehicle, or roughly 4 percent of the price of a typical 1983 model year passenger car. The additional weight of these safety features adds approximately \$200 in fuel expenses during the life of an average vehicle.

Occupant Protection

During 1983, 22,976 passenger car occupants were killed in crashes and an estimated 2.5 million more were injured. Nearly half of these deaths and injuries could have been prevented or reduced by the use of safety belts that prevent occupants from impacting the vehicle interior, or from being ejected in a crash. However, NHTSA estimates that

only about 14 percent of drivers and even fewer passengers used the safety belts that have been standard equipment in all passenger cars since 1968.

NHTSA's National Safety Belt Campaign continued to encourage motorists to take advantage of the effective and available protection offered by safety belts and child safety seats.

The goal of the Campaign is to underscore the benefits of safety belts by increasing public awareness of the risk of being involved in a crash and of the tremendous forces released in a crash; and by encouraging organizations and corporations to promote safety belt use among their members, employees, and constituencies.

The Campaign is appealing to people where they live and work, relying on influential national and local organizations to help communicate the safety belt message. This approach is being taken because safety belt use can best be encouraged by the institutions that have the most influence on behavior, and with which motorists regularly come in contact. A message that is delivered by a familiar face in the workplace, school, or in social contacts is likely to make a more lasting impression.

NHTSA has conducted extensive research to learn about public attitudes toward safety belts so that effective information can be produced to encourage belt use. Some of the findings were:

- o Many drivers and passengers interviewed (62 percent) did not understand how the locking mechanism of their shoulder belt retractor operated and, therefore, did not believe that their shoulder belt would protect them.
- o A high percentage of American adults are receptive to the idea of being persuaded to wear safety belts more often.

- o Eighty-two percent of all drivers interviewed in a recent survey believe that wearing a safety belt is a good health habit, just like brushing teeth, eating a proper diet, and exercising.
- o The American public feels strongly that drivers are responsible for the safety of passengers in their cars. Almost 94 percent of the people interviewed in a national survey said they would wear their safety belts if asked to do so directly by the driver.

Child Safety Seats

Interest in child safety seats has grown dramatically in recent years. Twenty-two additional states and the District of Columbia passed child safety seat laws during the year, bringing the total to 41 states (plus D.C.) with child passenger protection laws. Many of the remaining states were considering legislation in 1983.

In all states, child safety seat loaner programs are increasing in popularity, enabling parents who cannot afford to purchase a child safety seat to borrow one.

NHTSA's standard on child restraint systems requires that child safety seats be designed to be secured by means of vehicle lap belts, and that they meet a dynamic test for structural, displacement, and acceleration requirements when secured by the lap belts, and also by an additional top strap (tether), if such a strap is included in the design. It also specifies certain dimensions and material properties, and requires that installation and use instructions be provided with each unit.

Since the standard was issued in 1981, safety seat usage for children ages 4 and under has nearly doubled from the 1982 level of 22 percent to 40 percent in the last quarter of 1983. The child safety seat manufacturers are

producing safer seats that are more convenient to use.

Even with most states requiring child safety seat usage and the increased parental awareness of the importance of the devices, a significant number of parents still do not follow manufacturers' installation instructions, resulting in improper routing of the safety belt through the seat, or fail to install infant seats facing rearward, effectively reducing the safety benefits. Many also find that it is very difficult to seat a child into the devices properly.

In 2,900 observations of toddler safety seat usage in 19 cities in 1983, seats requiring the use of only safety belts for installation were installed properly 57 percent of the time. For seats requiring both belting and tether anchorage, only 15 percent were observed to be correctly installed. Eighty-eight percent of the toddlers were observed to be correctly harnessed in the seat itself.

A proposal to amend Standard No. 213, "Child Seating Systems," to reduce the pressure needed to open the buckles of child safety seats was issued on April 29, 1983. A lower pressure release requirement would make it easier for parents to open the buckles in an emergency but still prevent youngsters from unbuckling themselves.

The agency also moved to combine the Federal Aviation Administration's (FAA) standard on child safety seats and its own into a single standard. This approach is expected to simplify the certification of child safety seats and make it more convenient for parents by permitting the same child seat to be used for both motor vehicle and air travel. A proposal to make this amendment to Standard No. 213 was published on August 15, 1983.

NHTSA and FAA jointly tested all child seats available on the U.S. market

to the requirements of the FAA standard (the seats already met the NHTSA standard). The results were furnished to the child seat manufacturers so they could proceed with the required FAA certification.

Automatic Protection

On June 24, 1983, the U.S. Supreme Court held that NHTSA's 1981 rescission of the automatic protection requirements of Standard No. 208, "Occupant Crash Protection," was arbitrary and capricious. The Court said the agency has failed to consider adequately an "air bag only" or "air bag or non-detachable belt" option, and also said that the agency had not provided sufficient explanation as to why detachable automatic belts would not yield significant safety benefits. Subsequently, on October 19, 1983, the Department of Transportation issued a Notice of Proposed Rulemaking (NPRM) that requested comment on three regulatory actions under consideration.

The options included:

- o Retaining the existing requirement that all cars be equipped with automatic restraints, and set a new compliance date.
- o Amending the existing rule to permit compliance, for example, only with air bags or only with air bags or non-detachable automatic belts.
- o Rescinding the existing rule if further consideration supported such action.

In addition, other steps are possible in conjunction with, or as a supplement to, one or more of the above alternatives:

- o Conduct a demonstration program to gather more detailed data on public acceptability.

- o Seek legislation to require or provide incentives for mandatory state safety belt use laws.
- o Seek legislation requiring manufacturers to offer consumers the option of choosing air bags or automatic belts, if they prefer them over manual belts.

Comments were also sought on specific issues, including the following:

- o Public acceptance of and reaction to automatic restraints.
- o Benefits of automatic restraints, including: usage of belts, by type of belt; and effectiveness of the restraint when used.
- o Costs of compliance to consumers and manufacturers.
- o Magnitude of insurance savings.
- o Leadtime/compliance data requirements.

Public hearings on these issues were held in Los Angeles, November 28 and 29, 1983; Kansas City, December 1 and 2; and Washington, D.C., December 5-7.

NHTSA continued to encourage the automotive industry to develop and market advanced safety technologies in motor vehicles voluntarily. For example, the agency arranged for a demonstration project involving the retrofit of aftermarket driver-side air bag systems in 500 state police cars. A related project involving an innovative all-mechanical air bag system is expected to result in the retrofit of an additional 500 cars.

An agreement was also signed with the General Services Administration (GSA) to purchase 5,000 model year 1985

compact-sized sedans with driver's side air bags installed as original equipment. It is anticipated that the program will help to establish a substantial market for air bags by demonstrating their fatality and injury-reducing effectiveness, as well as their reliability and maintainability.

Frontal Impact Protection

Frontal crashes account for more than half of the injuries to motor vehicle occupants. Drivers account for more injuries (58 percent), and for more severe/fatal injuries (46 percent) than other occupants, primarily due to non-use of safety belts and resulting contact with the steering assembly.

During 1983, research in this area concerned improving the test procedures and equipment used to evaluate vehicle structural performance and interior components, such as instrument panels, pillars, windshields, and steering assemblies. Development and testing also continued on fixed barriers, moving impact barriers, improved test dummies, rollover test devices, and better test procedures.

Several analytical procedures are being developed to evaluate structural performance. These procedures will simulate actual collisions, and will permit refinements to be made to frontal structural design without need for a large series of expensive crash tests.

Side Impact Protection

The fatalities and injuries from side impact collisions comprise a major part of the cost of motor vehicle accidents. In 1983, 6,765 passenger car occupants were killed and about 26,800 were seriously injured in side impacts. Usually, the fatalities occur in high-speed side collisions involving extensive occupant compartment intrusion and possible occupant ejection.

Side impact research performed in 1983 included:

- o Crash test programs to evaluate the effects of interior side door padding and increased side strength.
- o A study to determine the driver performance effects of added door padding.
- o Tests to evaluate the feasibility and benefits of laminated side glazing (glass).
- o Crash computer model analyses to assess the injury effects of potential countermeasures.
- o Analyses of biomechanical test results to develop a thoracic injury index, and refinement of side impact dummy design requirements to improve its similarity of impact response with humans and its durability.
- o Impact tests on interior car components to determine their structural properties.

Pedestrian Impact Protection

There were 6,824 pedestrian fatalities in 1983. Accident studies conducted by NHTSA and based on information from 2,000 pedestrian accidents indicate that head impact with the ground (secondary impact) is the most frequent cause of head injury, but head impact with the front structure of passenger cars results in the most severe head injuries. The data also point to the front bumper, hood edge, and hood as the principal sources of pedestrian injuries.

NHTSA has been investigating the pedestrian/motor vehicle collision event through accident data analysis, math modeling, and full-scale impact experiments.

One recent study involved ranking pedestrian injuries by total medical treatment costs. This study indicated that the vehicle face (hood edge and grill) produces injuries with the highest medical treatment costs followed in order by the hood and fenders, bumper, and windshield. Using this medical treatment costs ranking system, injuries to the thorax (chest) and head are the dominant injury types. These preliminary results will be studied further, along with other injury severity ranking systems, to determine which parts of the vehicle could be modified to reduce injury severity.

A research program was underway to quantify the injury severity reduction benefits of bumpers designed to meet the requirements proposed in a 1981 Notice of Proposed Rulemaking on pedestrian impact protection. Paired experiments are being conducted using production bumper systems and modified systems meeting the proposed requirements. Post-test injuries will be assessed to determine the difference in injury severity between the production and modified bumper systems.

Engineering Analysis

The agency also used analytical tools and mathematical models to simulate crash behavior. Using computer models of a vehicle and its occupants to study crash effects provides a means to supplement test data and to evaluate the results of vehicle changes. One of the critical factors in this area is the availability of an extensive crash test data base. The data are being increased by other tests and by a broad-based compilation of automotive characteristics relevant to safety.

Biomechanics

Biomechanics is the field of study that applies engineering principles and techniques to understand and control impact trauma in humans. During 1983, biomechanical research continued to

establish tolerance levels for human trauma in motor vehicle accidents, and develop test tools that measure chances of injury.

The most notable result of these efforts was the development of a "Thoracic Trauma Index." This index, when given the impact response of the thorax (peak struck side rib and spinal acceleration), will estimate the probability that an individual of a given age and body weight will experience an injury at either the accident injury severity (AIS) 2, 3, 4, or 5 level. Additionally, research efforts have been completed on the development and documentation of a side impact dummy that is capable of human-like impact responses. Combined, the Thoracic Trauma Index and the side impact dummy enable NHTSA engineers to evaluate human injury hazards in side impacts.

A five-year program created to design an advanced anthropomorphic (human-like) dummy was begun. This dummy will enhance greatly NHTSA's capability of evaluating injury hazards in various crash conditions, developing and evaluating injury mitigating concepts, and developing the most efficient regulatory strategy for increasing crash safety at minimal cost. The effort to define the anthropometric (size, shape, and weight) characteristics of this advanced dummy in the seated automotive position was completed. This has resulted in three body forms, representing the small female, and the average and large male.

Review of Regulatory Actions

NHTSA continually reviews existing and pending federal motor vehicle safety standards and regulations to consider each in light of current circumstances and motor vehicle safety requirements.

Priority reviews completed in 1983 in compliance with Executive Order 12291 and the agency's own regulatory review plan included:

Standard No. 105, "Hydraulic Brake Systems." The review showed that dual braking systems required by this regulation saved an estimated 260 fatalities, 24,000 injuries, and 40,000 accidents each year. It also showed that front disc brakes, an improvement not required by Standard No. 105 but widely used by manufacturers during the 1960's and 1970's, save 60 lives, 6,000 injuries and 10,000 accidents each year.

Standard No. 108, "Lamps, Reflective Devices and Associated Equipment." The review found that side marker lamps required by the standard have significantly reduced low-speed and moderate-speed, nighttime angle collisions, preventing 106,000 accidents and 93,000 non-fatal injuries each year. The lamps, however, were not found to be effective in high-speed collisions; no fatality reduction was detected.

Standard No. 301, "Fuel System Integrity." The objective of Standard No. 301 is to reduce the chances of fatalities and injuries due to fires resulting from motor vehicle crashes. The review, based on statistical analyses of passenger car accident data from the state files, indicated that this standard has significantly reduced the rate of post-crash fires and post-crash fuel leakage; prevented 400 fatalities, 520 serious injuries, 110 moderate injuries, and 6,500 passenger car crash fires; and was implemented at a cost of about \$8.50 per vehicle.

Crashworthiness Rulemaking

During 1983, these three crashworthiness standards were modified:

Standard No. 205, "Glazing Materials." On March 10, 1983, a Notice of Proposed Rulemaking was issued in response to a petition by Saint Gobain Vitrage, a French glass manufacturer, to amend Standard No. 205 to permit the installation of a plastic-coated windshield, which could reduce facial injuries

caused by broken glass. On November 16, 1983, a final rule was issued to permit the use of this material in windshields and windows, except that it may not be used in convertibles, in vehicles that have no roof, or in vehicles with removable roofs.

The Maryland State Police have been evaluating glass-plastic windshields in a test fleet of 100 police cruisers. The results continue to be favorable. For example, a collision between a state police cruiser equipped with a glass-plastic windshield and a parked vehicle caused no lacerative injuries to the trooper who struck and broke the windshield.

General Motors also continued to report favorable experience with its test fleet of 2,500 vehicles equipped with glass-plastic windshields using technology developed by a French manufacturer and marketed under the trade name "Securiflex." By December 1, 1983, GM's fleet of rental cars had accumulated more than 38,400,000 miles of use by more than 252,000 drivers. GM reported 45 accidents involving windshield damage, with 16 involving occupant contact with the windshield; no occupants received lacerative injuries due to broken windshield glass.

A similar program was started later by the Ford Motor Company to evaluate glass-plastic windshields on a fleet of 2,500 Ford-manufactured cars.

During 1983, GM expanded its testing to include an additional 550 vehicles (1984 Buick Century and/or Oldsmobile Ciera automobiles). These vehicles are equipped with a five-ply, glass-plastic windshield manufactured by Libbey Owens Ford.

Standard No. 209, "Seat Belt Assemblies." This standard incorporates, by reference, a number of recommended practices and test procedures developed by voluntary standards organizations.

In 1980, NHTSA received a petition requesting incorporation of the most recent version of the American Society for Testing and Materials (ASTM) standard on testing the corrosion resistance of safety belt hardware. The agency agreed and, in 1982, issued a Notice of Proposed Rulemaking to update all referenced ASTM and American Association of Textile Chemists and Colorists specifications as well as SAE Recommended Practices. A final rule was issued on June 30, 1983, with an effective date of August 1, 1983.

In 1978, the Narrow Fabrics Institute petitioned NHTSA to revise the "Resistance to Light" test procedure in FMVSS No. 209 to remove the bias against polyester webbing material. The agency agreed and in 1980 issued a Notice of Proposed Rulemaking, on the matter. Subsequent testing led to another Notice of Proposed Rulemaking, issued on November 28, 1983, outlining a new test procedure that addressed the petitioners concerns.

Standard No. 222, "School Bus Passenger Seating and Crash Protection." On March 17, 1983, the agency issued a final rule amending its school bus seating standard to permit an increase in seat spacing from 21 to 24 inches. This amendment is expected to resolve complaints from school districts and contract carriers that mandatory seat spacing at the 21-inch level inhibited some necessary uses. The agency determined that the additional space seating option would not pose a safety problem.

Scientific and Technical Conferences and Workshops

Scientific and technical conferences and workshops on occupant and pedestrian protection play an important role in the agency's research program. These meetings are organized to provide a forum for the exchange of views,

technical information, and new developments that can be applied to reduce injuries and fatalities that result from crashes.

During 1983, the following technical conferences and workshops were held:

Pedestrian Protection. NHTSA and the Society of Automotive Engineers (SAE) co-sponsored an international conference devoted to pedestrian impact injury and assessment which was held during the SAE International Congress and Exhibition. (Detroit, Michigan, February 28 - March 2)

Child Safety. NHTSA organized an international technical conference on the

protection technology of children in automotive accidents. The conference was jointly sponsored by the Society of Automotive Engineers and the International Restraints Committee on Biokinetics of Impact. The sessions were attended by more than 100 participants representing the technical community, consumer groups, public health, automotive and child restraint manufacturers. (San Diego, California, October 16-17)

Biomechanics of Impact. NHTSA participated in a three-day technical seminar convened by the Commission of European Communities to review the progress of biomechanical research and to help draft recommendations for further actions. Brussels, Belgium, March 21-23)

Table 5. List of Federal Motor Vehicle Safety and Fuel Economy Standards and Regulations in Effect in Calendar Year 1983

Federal motor vehicle safety standards are substantive documents establishing minimum levels of vehicle performance relating to safety, fuel economy, or other areas. On the other hand, regulations generally are procedural documents requiring, for example, the provision of information to the agency or to consumers, establishing rules for agency action, or providing additional information as to the applicability of standards.

49 CFR 571 Standard	Description
101	Controls and Displays
102	Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect
103	Windshield Defrosting and Defogging Systems
104	Windshield Wiping and Washing Systems
105	Hydraulic Brake Systems

Table 5. List of Federal Motor Vehicle Safety and Fuel Economy Standards and Regulations in Effect in Calendar Year 1983 (Continued)

49 CFR 571 Standard	Description
106	Brake Hoses
107	Reflecting Surfaces
108	Lamps, Reflective Devices and Associated Equipment
109	New Pneumatic Tires (Passenger Cars)
110	Tire Selection and Rims (Passenger Cars)
111	Rearview Mirrors
112	Headlamp Concealment Devices
113	Hood Latch Systems
114	Theft Protection
115	Vehicle Identification Number
116	Motor Vehicle Brake Fluids
117	Retreaded Pneumatic Tires (Passenger Cars)
118	Power-Operated Window Systems
119	New Pneumatic Tires (Other than Passenger Cars)
120	Tire Selection and Rims (Other than Passenger Cars)
121	Air Brake Systems
122	Motorcycle Brake Systems
123	Motorcycle Controls and Displays
124	Accelerator Control Systems
125	Warning Devices
126	Truck-Camper Loading

Table 5. List of Federal Motor Vehicle Safety and Fuel Economy Standards and Regulations in Effect in Calendar Year 1983 (Continued)

49 CFR 571 Standard	Description
201	Occupant Protection in Interior Impact
202	Head Restraints
203	Impact Protection for the Driver from the Steering Control System
204	Steering Control Rearward Displacement
205	Glazing Materials
206	Door Locks and Door Retention Components
207	Seating Systems
208	Occupant Crash Protection
209	Seat Belt Assemblies
210	Seat Belt Assembly Anchorages
211	Wheel Nuts, Wheel Discs, and Hub Caps
212	Windshield Mounting
213	Child Restraint Systems
214	Side Door Strength
215	(RESERVED)
216	Roof Crush Resistance
217	Bus Window Retention and Release
218	Motorcycle Helmets
219	Windshield Zone Intrusion
220	School Bus Rollover Protection

Table 5. List of Federal Motor Vehicle Safety and Fuel Economy Standards and Regulations in Effect in Calendar Year 1983 (Continued)

Part	Description
221	School Bus Body Joint Strength
222	School Bus Passenger Seating and Crash Protection
301	Fuel System Integrity
302	Flammability of Interior Materials

In addition to the above motor vehicle safety standards, the following regulations of a procedural or informational nature were applicable in calendar year 1983. These regulations govern the actions of the agency, and the informational and procedural requirements that must be met by manufacturers of motor vehicles for sale in the United States.

19 CFR 12.80	<u>Import Regulations</u> - specifies that all imported motor vehicles, new or used, manufactured on or after January 1, 1968, must conform to applicable Federal Motor Vehicle Safety Standards in effect on their date of manufacture.
49 CFR 501	<u>Organization and Delegation of Power and Duties</u> - describes the organization of the National Highway Traffic Safety Administration (NHTSA).
49 CFR 510	<u>Information Gathering Powers</u> - governs the use of the information gathering powers of NHTSA.
49 CFR 511	<u>Adjudicative Procedures</u> - establishes rules of practice and procedure for adjudicative proceedings.
49 CFR 512	<u>Confidential Business Information</u> - establishes the procedure by which the NHTSA will consider claims that information submitted to the NHTSA is confidential business information.
49 CFR 520	<u>Procedures for Considering Environmental Impacts</u> - governs the agency's consideration of all environmental aspects of proposed actions.
49 CFR 523	<u>Vehicle Classification</u> - establishes categories of vehicles subject to fuel economy standards.

Table 5. List of Federal Motor Vehicle Safety and Fuel Economy Standards and Regulations in Effect in Calendar Year 1983 (Continued)

Part	Description
49 CFR 525	<u>Exemptions from Average Fuel Economy Standards</u> - provide content and format requirements for low-volume manufacturers of passenger automobiles seeking exemptions.
49 CFR 526	<u>Petitions and Plans for Relief Under the Automotive Fuel Efficiency Act of 1980</u> - provisions for applications for alternative fuel economy standards.
49 CFR 527	<u>Reduction of Passenger Automobile Average Fuel Economy Standards</u> - establishes procedures for submission and disposition of petitions filed by manufacturers of passenger automobiles to obtain reduction of the applicable average fuel economy standard for model year 1978, 1979, or 1980.
49 CFR 529	<u>Manufacturers of Multistage Automobiles</u> - determines, in cases where more than one company is the manufacturer of an automobile, which company is to be treated as the manufacturer for purposes of compliance with fuel economy standards.
49 CFR 531	<u>Passenger Automobile Average Fuel Economy Standards</u> - establishes fuel economy standards for passenger automobiles.
49 CFR 533	<u>Light Truck Fuel Economy Standards</u> - establishes fuel economy standards for light trucks up to and including 8,500 lbs. gross vehicle weight rating.
49 CFR 535	<u>Three-Year Carryforward and Carryback of Credits for Light Trucks</u> - establishes regulations governing three-year carryforward and carryback of credits for manufacturers of light trucks subject to fuel economy standards.
49 CFR 537	<u>Automotive Fuel Economy Reports</u> - establishing requirements for automobile manufacturers to submit reports regarding their efforts to improve fuel economy.
49 CFR 551	<u>Procedural Rules</u> - contains rules of procedure generally applicable to the transaction of official business.

Table 5. List of Federal Motor Vehicles Safety and Fuel Economy Standards and Regulations in Effect in Calendar Year 1983 (Continued)

Part	Description
49 CFR 552	<u>Petitions for Rulemaking, Defect and Noncompliance Orders</u> - to identify and respond to petitions for rulemaking or defect or noncompliance determination and to inform the public of the procedures following response to petitions.
49 CFR 553	<u>Rulemaking Procedures</u> - prescribes rulemaking procedures that apply to the issuance, amendment and revocation of rules.
49 CFR 554	<u>Standards Enforcement and Defect Investigation</u> - establishes procedures for enforcing federal motor vehicle safety standards and associated regulations, investigating possible safety-related defects, and making noncompliance and defect determinations.
49 CFR 555	<u>Temporary Exemption from Motor Vehicle Safety Standards</u> - establishes requirements for the temporary exemption of certain motor vehicles from compliance with one or more federal motor vehicle safety standards.
49 CFR 556	<u>Exemption for Inconsequential Defect or Noncompliance</u> - sets procedures for exempting manufacturers of motor vehicles and replacement equipment from the Act's notice and remedy requirements when a defect or noncompliance is determined to be inconsequential as it relates to motor vehicle safety.
49 CFR 557	<u>Petitions for Hearings on Notification and Remedy of Defects</u> - establishes procedures for holding hearings on petitions filed concerning whether a manufacturer has met his obligation of a safety-related defect or failure to comply with a federal motor vehicle safety standard or to remedy such failure.
49 CFR 565	<u>Vehicle Identification Number</u> - specifies format and content for the vehicle identification number system to simplify vehicle identification information retrieval and increase the accuracy and efficiency of vehicle defect recall campaigns.

Table 5. List of Federal Motor Vehicle Safety and Fuel Economy Standards and Regulations in Effect in Calendar Year 1983 (Continued)

Part	Description
49 CFR 566	<u>Manufacturer Identification</u> - requires manufacturers of motor vehicles and of motor vehicle equipment for a motor vehicle to which safety standard applies to submit identification information and description of the items produced.
49 CFR 567	<u>Certification</u> - specifies content, location and requirements for label or tag to be affixed to motor vehicles indicating which standards are applicable to the vehicle.
49 CFR 568	<u>Vehicles Manufactured in Two or More Stages</u> - prescribes method by which manufacturers of vehicles manufactured in in two or more stages shall ensure conformity of vehicles with the federal standards and regulations
49 CFR 569	<u>Regrooved Tires</u> - conditions under which regrooved and regroovable tires may be sold, offered for sale, introduced for sale, or delivered for introduction into interstate commerce.
49 CFR 570	<u>Vehicle in Use Inspection Standards</u> - establishes criteria for the inspection of motor vehicles by State inspection systems.
49 CFR 572	<u>Anthropomorphic Test Dummies</u> - describes dummies that are to be used for compliance testing.
49 CFR 573	<u>Defect and Noncompliance Reports</u> - specifies requirements for manufacturers to maintain lists of purchasers and owners notified of defective and noncomplying motor vehicles and equipment.
49 CFR 574	<u>Tire Identification and Recordkeeping</u> - establishes recordkeeping requirements for brand name owners.
49 CFR 575	<u>Consumer Information Regulations</u> - establishes required information to be provided to first purchasers.
49 CFR 576	<u>Record Retention</u> - establishes requirements for retention by motor vehicle manufacturers of complaints, reports and other records concerning malfunctions that may be related to safety.

Table 5. List of Federal Motor Vehicle Safety and Fuel Economy Standards and Regulations in Effect in Calendar Year 1983 (Continued)

Part	Description
49 CFR 577	<u>Defect and Noncompliance Notification</u> - sets forth requirements for notification to owners of motor vehicles and/or equipment about a possible defect which relates to safety or noncompliance with standards.
49 CFR 579	<u>Defect and Noncompliance Responsibility</u> - sets forth responsibilities of manufacturers for safety-related defects and noncompliances with safety standards.
49 CFR 580	<u>Odometer Disclosure Requirements</u> - prescribes rules requiring the transferor of motor vehicle to make written disclosure to the transferee concerning the odometer mileage and its accuracy.
49 CFR 581	<u>Bumper Standard</u> - establishes requirements for impact resistance of vehicles in low-speed front and rear collisions.
49 CFR 582	<u>Insurance Cost Information Regulation</u> - requires automobile dealers to furnish information reflecting differences in insurance costs for different makes and models of passenger motor vehicles.
49 CFR 590	<u>Motor Vehicle Emission Inspections</u> - specifies standards and procedures for motor vehicle emission inspections by state or state-supervised diagnostic inspection demonstration projects.

BLANK PAGE

Avoiding Accidents

The complex relationship between a motor vehicle and its driver is the subject of considerable interest at NHTSA. Factors influencing this relationship include the driver's physical abilities and driving experience, the nature of the driving, the responsiveness of the motor vehicle and its components to the driver's demands, and environmental considerations, such as road condition and weather.

Driver improvement programs, strict law enforcement, and better highway engineering have been the traditional and most publicized approaches to motor vehicle accident prevention. But improvements in vehicle components, such as brakes, steering assemblies, tires, wheels, mirrors, and lights also contribute to the safe and efficient operation of a motor vehicle.

Visibility and Vehicle Conspicuity

Vision accounts for more than 90 percent of the information a driver receives. NHTSA's research to improve visibility is concerned with the need to reduce blind spots caused by inadequate rearview mirror systems and vehicle obstructions. It also attempts to minimize the impairment of the driver's field of view due to inclement weather and reduce nighttime visibility because of heavily tinted windows.

For example, NHTSA-sponsored research has demonstrated that many trucks and vans have blind spots that prevent the driver from seeing other vehicles approaching from the rear and the side.

The agency has field tested different mirror combinations to determine which reduce blind spots most effectively without creating other visibility problems. The tests involve 6,000

light-duty trucks: 2,000 are control vehicles with conventional plane mirrors; 2,000 are equipped with plane mirrors on the driver's side and a single convex mirror on the passenger side; and 2,000 are equipped with both plane and convex mirrors on both sides. Collection of accident data is now in progress and will continue until mid-1985.

On August 30, 1983, the agency issued a final rule to amend Standard No. 111, "Rearview Mirrors," to permit the use of non-uniform radius of curvature school bus mirrors as original equipment. These mirrors improve the view of the area in front of and along the sides of buses. Previously, only uniform radius mirrors could be used for this purpose. The decision responded to a petition from the North Carolina State Board of Education and is expected to help keep children in sight of a bus driver.

Vehicle conspicuity research attempts to reduce the likelihood of vehicle-to-vehicle crashes by improving a driver's ability to see another vehicle, and to judge such things as distance between vehicles, closing speed, and the probable courses of action of other vehicles.

Research now in progress will evaluate the accident reduction potential of equipping trucks with retro-reflective materials in a particular configuration shown in laboratory studies to make these vehicles more conspicuous, especially at night. The research is expected to determine if equipping vehicles with improved conspicuity devices will reduce rear and side collisions.

Lighting

A new rule designed to significantly reduce the danger of rear-end collisions was issued in 1983.

The new regulation requires the installation of a third stop lamp to be mounted in the line of sight near the rear window of all passenger cars produced after September 1, 1985, although automakers may install the light before that date.

The new rule follows years of extensive federally-funded research on vehicle rear lighting systems and is expected to cut the number of rear-end collisions significantly, and eliminate 40,000 injuries as well as save an estimated \$434 million in property damage annually.

In response to a petition by Ford Motor Co., a final rule amending Standard No. 108, "Lamps, Reflective Devices, and Associated Equipment," was issued, which allows the use of headlamp systems with contoured lens surfaces and a new standardized replacement bulb. Unlike current headlamps with rectangular or round lenses of specified dimensions, no dimensions are specified in the amended rule, giving manufacturers more freedom in the design of the lens-reflector, as long as the light output meets NHTSA's present requirements.

Such headlamps could enhance safety by allowing replacement bulbs to be carried in a car for immediate use when needed, and provide for increased fuel economy by permitting more aerodynamic front ends.

A consumer benefit from the amended standard is that a burned-out bulb can be replaced with a standardized bulb without the labor and expense of replacing the entire headlamp unit. Manufacturers will be required to furnish a spare bulb with each new vehicle manufactured during the first year the amended standard is in effect.

A series of tests was adopted to assure that the new lamps perform adequately in a variety of environmental conditions. One test is directed particularly toward the durability of plastic materials used in the lens. This can contribute to safety, because plastic lenses are generally superior in resisting damage from stones, a common source of damage to glass lenses.

In a related action, a separate amendment to Standard No. 108 was issued to permit motor vehicles to be equipped with a new two-lamp rectangular sealed beam headlamp system. The new headlamps have external dimensions identical to those of headlamps used in four-lamp, rectangular, headlamp systems, but the individual lamps will be smaller than those currently allowed in two-lamp systems.

The change was requested by the Chrysler Corporation to facilitate aerodynamic improvements in vehicle front-end designs, which will lead to increased fuel economy.

A Notice of Proposed Rulemaking was also issued to implement changes that would help to harmonize United States and European lighting specifications. Compatibility that could come from these changes would help both consumers and manufacturers because they would not have to pay for costly differences in regulatory requirements when there is no added safety benefit.

The proposed changes are:

- o Extension of the range of allowable brightness in yellow rear turn signals to facilitate the use of common bulbs for these lights in both U.S. and European cars.
- o Changes in photometric test pattern so that similar procedures may be

used to test the intensity of stop, tail, turn signal and parking lamps.

- o Adoption of the latest Society of Automotive Engineers standard for license plate lamps, to include a specific point of measurement between lamps, plates and holder.
- o Changing the minimum permitted mounting heights of headlamps from 24 inches to 22 inches, measured from road surface to the center of the lamp, to provide compatibility with European lamp levels.

Vehicle Identification Number

Standard No. 115, "Vehicle Identification Number," requires each motor vehicle to have a unique 17-digit vehicle identification number (VIN), identifying the manufacturer, make, type, size, place of manufacture, and individual sequential number of manufacture. The VIN is used to identify vehicles subject to safety defect recall campaigns and helps in the recovery of stolen vehicles.

On May 13, 1983, NHTSA issued a final rule amending the standard by deleting portions and reissuing them as a general agency regulation. This action was taken to assure that the recall and remedy provisions of the National Traffic and Motor Vehicle Safety Act do not apply to certain minor errors in VIN's that have no safety consequences. This action did not change the basic requirements of the standard and was issued to permit administrative information contained with the VIN to be governed by a regulation rather than a safety standard.

Power Windows

A final rule was issued on October 14, 1983, to permit the operation of power windows and partitions during the

interval between when the ignition key is shut off and a door is opened. Previously, power windows could not be operated after the ignition was turned off.

The rule is expected to increase driver convenience by permitting the power windows to operate in situations when the engine is not running but the driver needs to lower a window, such as giving instructions to a service station attendant. Once the door is opened, the windows would become inoperable until power is restored. The change will not adversely affect safety because, except in rare circumstances, the driver would be in the vehicle and able to supervise the operation of the windows.

Controls and Displays

On August 30, 1983, a Notice of Proposed Rulemaking was issued, which proposed to update Standard No. 123, "Motorcycle Controls and Displays," by adding symbols as an option to the words that are presently required to identify controls and displays. The symbols proposed were developed by the International Standards Organization (ISO). These changes would reduce compliance costs for manufacturers by promoting international harmonization and could result in safety benefits because symbols can convey information more quickly and with less chance of misunderstanding than words. This action may reduce costs because manufacturers, producing vehicles for sale in both the U.S. and abroad, would not have to produce separate dashboards or controls and displays to meet conflicting identification requirements.

Brakes

Standard No. 105, "Hydraulic Brake Systems," was amended to allow an optional test procedure for trucks and buses (except school buses) with gross vehicle weight rating greater than 10,000 pounds. The amendment corrected an anomaly in the test procedure.

A major testing program to develop a new test procedure and requirements for passenger car braking performance was performed at NHTSA's Vehicle Research and Test Center (VRTC). The goal of this program is to propose a new standard that would eventually replace Standard No. 105, and would be harmonized with the new international braking standard being developed by the Economic Commission for Europe. Documentation of the results of this testing was begun, including preparation of a research paper on a portion of the testing, which will be presented at the Society of Automotive Engineers' 1984 International Congress and Exposition.

Research into advanced motorcycle brake systems also continued in 1983. Since motorcycles have independent front and rear brake controls, it is difficult to balance the brake forces manually. Improper balance leads to either longer stopping distances, or wheel lock, followed by the motorcycle capsizing. This research is expected to lead to more effective braking performance.

An initial testing program to investigate wet brake fade on motorcycles was completed. This testing demonstrated that wet brake conditions could be accurately simulated by the "on board" water spray system designed into the motorcycle tow device used in testing.

A project to build and evaluate a prototype all-mechanical, anti-lock brake system also was begun.

Handling and Stability

Projects were conducted both at headquarters and at VRTC to improve NHTSA's capabilities to measure handling and stability by using computers to simulate vehicle motion.

Three vehicle handling computer simulations were implemented: large-

scale, general purpose simulation for both closed-loop (driver included) and open-loop (driver not included) vehicle handling; specialized simulation to investigate the detailed dynamics of vehicle braking; and specialized, closed-loop simulation to investigate how drivers compensate for vehicle and environmental changes.

Heavy Truck Safety Research

Heavy trucks are involved in more than 10 percent of the fatal accidents, yet they comprise only 2.6 percent of the motor vehicle fleet. They account for about 20 percent of the fatalities resulting from vehicle-to-vehicle crashes.

During 1983, NHTSA's heavy truck research was concentrated on crash avoidance programs that had the highest probability of reducing truck-car encounters. These included:

- o A program to assess the life cycle costs and performance (including effectiveness, reliability, and maintainability) of automatic brake adjustment systems in fleet use. Poor brake adjustment is a major problem with heavy trucks. Typically, 40 to 70 percent of trucks inspected have one or more axles with brakes grossly out of adjustment. Brake torque loss can be as great as 75 percent over the acceptable brake adjustment range when the brakes are hot.
- o Using existing heavy vehicle dynamic simulation models to identify the design features that are most important in determining the undesirable aspects of truck behavior, (i.e., the propensity of heavy trucks to spin out, jackknife, and/or rollover in accident avoidance maneuvers).

- o Research to establish the technical basis for proposing requirements to ensure that a tractor made by one manufacturer, when coupled to a trailer made by a different manufacturer, will have balanced braking performance.
- o The publication of a preliminary characterization of the manufacturers and users of heavy vehicles in the United States.
- o The publication of a report on techniques to suppress splash and spray from heavy trucks.

Vehicle Research and Test Center

NHTSA's Vehicle Research and Test Center (VRTC), located at the Transportation Research Center near East Liberty, Ohio, conducts research on how vehicles behave in driving situations and what happens when they crash. Projects range from investigating the braking and controllability of large trucks to the survival of vehicle occupants and pedestrians when crashes occur. The VRTC also conducts research to support the agency's safety-related defect investigations.

VRTC projects include evaluation and development of anthropomorphic (human-like) test devices for studying the injury effects of side impact crashes, and the evaluation of vehicle structures through both component tests and full-scale vehicle crash tests.

Survival inside impact crashes is being studied in support of the NHTSA Side Impact Protection Project. Extensive side impact crash testing of conventional and modified vehicles was conducted. It was demonstrated that practical vehicle modifications can reduce occupant injuries significantly.

Research on pedestrian injuries includes investigations of pedestrian accidents to acquire detailed information about the accident, damage to the vehicle, and the resulting injuries. In some cases, the damaged parts of the vehicle are obtained to allow exact replication of the impact in the laboratory. This enables NHTSA engineers to study what happened in the accident and make a correlation between impact forces and specific pedestrian injuries. A detailed analysis of pedestrian accidents resulted in the development of impact devices that permit accurate simulation of child head and thorax collisions against the front of a vehicle.

BLANK PAGE

Fuel Economy

As a result of the oil embargo of 1983, substantial increases in the price of imported petroleum, and a recognition of the nation's vulnerability to foreign oil supplies and pricing, in December 1985, Congress passed the Energy Policy and Conservation Act. The law added Title V to the Motor Vehicle Information and Cost Savings Act, requiring the Secretary of Transportation to set average fuel economy standards for passenger cars and light trucks. In compliance with Title V, standards were set for both categories of vehicles through model year 1985.

The agency also developed proposed fuel economy standards for model years 1986 and 1987 light trucks. The first step in the rulemaking process occurred in October 1982, when a questionnaire was sent to domestic and foreign light truck manufacturers. Information was requested on such items as production plans, fuel economy gains expected from particular technology items, sales projections, and capital expenditures. Responses to the questionnaire were received in late 1982 and early 1983. NHTSA used these responses to begin development of the proposed standards for model years 1986 and 1987.

In November 1983, the agency received a petition from the Ford Motor Company to lower the existing light truck fuel economy standards for model years 1984 and 1985. Ford's primary argument was that projected consumer demand for more fuel-efficient light trucks and smaller displacement engines had not materialized to the extent anticipated when the standards were established in 1980. Additional data

were requested from Ford to substantiate the claims made in its petition and to provide the information necessary for the agency to make a decision on the petition. In addition, an analysis was underway on a rulemaking on light truck fuel economy for model year 1986.

Fuel Economy Enforcement

Fuel economy enforcement involved monitoring the 1983 corporate average fuel economy (CAFE) performance by the manufacturers' 49 fleets of passenger automobiles and light trucks against the applicable fuel economy standards; reviewing the current model year projected CAFE; and enforcing the requirement that new car dealerships display and distribute gas mileage guide booklets.

Eleven manufacturers' fleets had CAFE's below or projected to be below the applicable 1983 average fuel economy standards. To avoid a noncompliance with the standard, credits earned in previous model years for exceeding the standards were used by manufacturers to offset their shortfall in fuel economy.

Model year 1983 was the first year that an automobile manufacturer may be liable to the United States for failure to comply with the average fuel economy standards. Jaguar Cars, Inc. was not in compliance with the applicable standard and may be subject to a civil penalty.

The 11 manufacturers' fleet whose fuel economy performance was below or projected to be below the 1983 average fuel economy standards were as follows.

<u>Manufacturer</u>	<u>Fleet</u>	<u>CAFE</u> <u>(mpg)</u>	<u>Standard</u> <u>(mpg)</u>
Alfa Romeo	Passenger cars	25.2	26.0
BMW	Passenger cars	25.6	26.0
Chrysler	Domestic light trucks	17.7	19.0
Fiat	Passenger cars	13.2	26.0
Ford	Domestic passenger cars	23.8	26.0
General Motors	Domestic passenger cars	23.5	26.0
Ford	Domestic 4x4 trucks	17.2	17.5
Jaguar	Passenger cars	18.8	26.0
Peugeot	Passenger cars	25.1	26.0
SAAB	Passenger cars	25.8	26.0
Volvo	Passenger cars	25.8	26.0

Twelve new car dealerships were inspected to check on the display and distribution of gas mileage guide booklets. Warning letters were sent to three dealerships that were not complying with the display and distribution requirements.

Fuel Economy Standards for Passenger Cars and Light Trucks
for the 1978 through 1985 Model Years (in MPG)

Model Year	Passenger Cars	1		
		Two-Wheel Drive	Four-Wheel Drive	2 Composite
1978	18.03 ³	—	—	—
1979 ⁴	19.0 ³	17.2	15.8	17.2
1980 ⁵	20.0 ³	16.0	14.0	—
1981 ⁵	22.0	16.7	15.0	—
1982	24.0	18.0	16.0	17.5
1983	26.0	19.5	17.5	19.0
1984	27.0	20.3	18.5	20.0
1985	27.5 ^{3&6}	21.6	19.0	21.0

- Standards for 1979 model year light trucks were established for vehicles with a gross vehicle weight rating (GVWR) of 6,000 pounds or less. Standards for MY's 1980 through 1985 are for light trucks with a GVWR of up to and including 8,500 pounds.
- For model years 1982-85, manufacturers may comply with the two-wheel and four-wheel drive standards or may combine their two-wheel and four-wheel drive light trucks and comply with the combined standard.
- Established by Congress in the Energy Policy and Conservation Act of 1975.
- For MY 1979, light truck manufacturers may comply separately with standards for four-wheel drive, general utility vehicles and all other light trucks, or combine their trucks into a single fleet and comply with the 17.2 mpg standard.
- Light trucks manufactured by a manufacturer whose fleet is powered exclusively by basic engines, which are not also used in passenger automobiles, must meet standards of 14 mpg and 14.5 mpg in model years 1980 and 1981, respectively.
- For MY 1985 and thereafter.

BLANK PAGE

Enforcement

NHTSA is responsible for enforcing federal laws, standards and regulations on motor vehicle safety. During 1983, motor vehicle manufacturers recalled 6.1 million vehicles because of safety-related defects.

In addition, the agency enforces the odometer requirements of the Motor Vehicle Information and Cost Savings Act, which includes prohibitions against tampering with motor vehicle odometers, as well as disclosure requirements for vehicle sellers.

NHTSA's safety enforcement activities are divided into two operational areas: defects investigation, and vehicle safety standards compliance. Defect investigations cover domestic and foreign motor vehicles, tires, equipment, and the safety-related defect notification requirements of the National Traffic and Motor Vehicle Safety Act of 1966, whereas compliance investigations involve areas of motor vehicle safety standards and associated regulations.

The motoring public is the primary source of information for defect investigations; NHTSA receives approximately 2,500 reports a month concerning problems with motor vehicles, tires, and equipment.

Safety Defects

When a manufacturer obtains information that a safety defect exists, or that a group of vehicles or items of equipment do not comply with a federal motor vehicle safety standard, it is required by law to notify the vehicle owner, dealers, distributors, and NHTSA. The manufacturer also is required to remedy the problem free of charge to vehicle owners. This applies to vehicles and equipment that are eight years

old or less and to tires that are three years old or less.

Since 1966, 105.7 million vehicles have been recalled by manufacturers to correct safety defects. NHTSA influenced the recall of 54.3 million of these vehicles.

The Investigative Process

Most safety recalls are initiated by manufacturers entirely on their own and in response to applicable laws and regulations. Even if NHTSA has started the process of identifying a safety-related defect, a manufacturer can agree to a voluntary recall at any time. In fact, most recalls are voluntary, even when NHTSA is involved, and very few have been "ordered" by NHTSA. Voluntary recalls are preferable to ordered recalls because they get defective cars off the road much sooner.

The identification of a safety-related defect by NHTSA is a four-step process. First, information is gathered, primarily from consumer/owner letters and from consumer calls to the NHTSA Auto Safety Hotline. Each letter is reviewed and the safety defect information is then computerized for easy analysis and quick retrieval. When a trend is identified, the next step in the process is triggered, beginning either an inquiry or an engineering analysis.

An inquiry usually precedes an engineering analysis. During the inquiry, the manufacturer is contacted and asked to provide information relating to the problem and this information is used to decide whether an engineering analysis should be initiated.

An engineering analysis is conducted to identify engineering defects that have safety implications. As part

of this analysis, the manufacturer is contacted and requested to supply production information, technical data, and complaints received. During this analysis, complaint data are further reviewed and engineering studies and vehicle or equipment tests may be conducted.

If a potential safety-related defect is identified through an engineering analysis, and there is no voluntary recall, the next step is to open a formal defect investigation to determine if the consequences and safety implications of the defect warrant a recall.

With the opening of a defect investigation, the manufacturer is again notified and a press release is issued asking that the public provide the agency with information pertaining to the investigation.

During the investigation, all previously collected information is reviewed, confirmed, and supplemented, and interviews may be conducted with drivers or accident victims who have experienced the problem. Further studies and vehicle testing may also be conducted. During this phase, some manufacturers agree to a recall and the investigation is closed. If the investigation supports a defect finding, and the manufacturer does not recall voluntarily, an initial determination is made that a safety-related defect exists and that a recall is warranted.

After an initial determination is made, the manufacturer is notified and a public meeting is scheduled to offer the manufacturer and the public an opportunity to present views and arguments concerning the alleged safety defect. Even at this stage, the manufacturer may agree to a recall.

Following the public meeting and a review of the material presented, the Administrator makes a decision on the matter, ordering a recall if a final determination is made that a safety

defect exists. If the manufacturer still does not recall, the matter is pursued in federal court.

1983 Recalls

There were 140 safety recall campaigns in 1983 involving 6.1 million motor vehicles. Thirty of the recall campaigns involving some 4.3 million vehicles were influenced by NHTSA. In addition to these recalls, 964,000 units of motor vehicle equipment and 95,000 tires were recalled.

Some of the major safety recalls that occurred in 1983 were:

Volkswagen. NHTSA influenced the recall of more than 1.7 million Volkswagen-manufactured vehicles in three separate recalls. The first recall involved 930,000 model year 1976-82 VW Rabbit, pick-up, convertible; Jetta; Dasher; Scirocco; and Audi Fox vehicles to correct a problem with the electrical supply to the fuel pump, which caused the vehicles to become disabled in traffic. The second recall involved 660,000 model year 1975-79 Rabbits and Sciroccos to correct a problem with brake line corrosion, which could lead to loss of brakes. The third recall involved 117,000 model year 1975-79 Audi 5000s for alteration of the brake pedal height to prevent inadvertent application of the accelerator when applying the brakes.

General Motors. NHTSA influenced the recall of 730,000 General Motors vehicles in two separate actions. The first recall involved 490,000 model year 1980-82 Chevrolet Chevettes and model year 1981-82 Pontiac T-1000 passenger cars to correct a fuel leak, which could result in engine compartment fires. General Motors also recalled 240,000 1980 model X-body cars to correct a rear brake lock-up problem.

Nissan. NHTSA influenced the recall of 566,000 vehicles by the Nissan Motor Corporation. Nissan recalled 328,000

model year 1974-78 Datsun B210 passenger cars to correct a fuel tank support problem, which could allow the fuel tank to fall from the vehicle. Nissan recalled an additional 238,000 model year 1982-83 Sentra passenger cars to correct a problem that was causing the windshield wiper to catch on the radio antenna bracket.

Ford. Ford Motor Company voluntarily recalled 610,000 model year 1981-83 Ford Escort and Mercury Lynx models to reinforce the door latch mounting to prevent accidental door opening.

Chrysler. NHTSA influenced the recall of 160,000 model year 1976-78 Plymouth Arrow and 1977-78 Dodge Colt passenger cars to correct a problem with corrosion of the fuel tank support straps. Failure of these straps could allow the fuel tank to separate from the vehicle.

Subaru. NHTSA influenced the recall of 230,000 model year 1980-81 Subaru vehicles except the BRAT model for replacement of the fuse holder with an in-line fuse holder to prevent excessive heat buildup in the headlamp circuit.

Inquiries, Engineering Analyses and Formal Defect Investigations

In 1983, there were 145 inquiries and engineering analyses opened, and 98 were carried over from previous years. One hundred thirty-seven inquiries and engineering analyses were closed without action because it did not appear that a potential safety-related defect was present. There were also 20 recalls that were influenced by inquiries and engineering analyses, some of which were in progress prior to 1983.

Two formal defect investigations were opened, one of which resulted in the recall of 661,585 VW Rabbit and Scirocco vehicles for brake line corrosion. Ten investigations were still active at the end of the year.

Recall Audits

Recall campaign audits are conducted to determine the effectiveness of recall campaigns and to evaluate the manufacturer's remedy.

Audits demonstrate to vehicle owners, vehicle and equipment manufacturers, dealers, and distributors that NHTSA is concerned that the recall work is properly completed and accomplished within a reasonable period of time. The audit involves direct communication between NHTSA and vehicle owners, so owners can express satisfaction or dissatisfaction with the handling of the recall and furnish information to help improve future campaigns.

Audits may be conducted by mail and/or through visits by the NHTSA staff. A mail audit requests that the vehicle owner provide specific information on the recall experience. Typical questions concern the timeliness of the repair and whether the repair was adequate. The field audits, conducted by both NHTSA headquarters and regional office staffs, include contact with owners and visits to dealerships to examine records and to talk with service and parts department employees.

In 1983, five audits were opened and two audits begun in 1982 were completed. In addition to asking questions about a specific recall, owners were asked to comment on any other problems they had experienced with the vehicle. Copies of the comments received in response to the recall campaign mail audits were sent to the manufacturer and follow-up checks with the manufacturers found that the complaints mentioned in the comments were resolved expeditiously.

Vehicle Safety Compliance

Vehicle safety compliance involved testing, inspection, and investigation of vehicles and equipment to assure

that they comply with the National Traffic and Motor Vehicle Safety Act of 1966, and federal motor vehicle safety standards and associated regulations, including the joint import regulation issued by the Secretaries of Transportation and Treasury.

Monitoring compliance is a serious enforcement function and considerable emphasis is placed on making the process work efficiently. A professional working relationship has resulted in many instances of voluntary manufacturer recalls in cases of noncompliance, saving the industry and NHTSA time and financial costs that would otherwise be expended in formal administrative hearings and related legal actions. The motoring public is the ultimate beneficiary when safety problems are remedied quickly.

Compliance Testing

Each year, NHTSA tests representative samples of new vehicles and automotive equipment for compliance with federal motor vehicle safety standards and regulations. This sampling provides a measure of assurance that manufacturers are providing consumers with products that meet prescribed safety requirements.

Test vehicles are selected by NHTSA with the aid of a computer that considers previous agency test results, accident data, owner complaints, and engineering evaluation of design features across all model lines. Based on these and other related factors, the computer then identifies recommended vehicle test priorities. NHTSA then makes a final decision on which cars will be tested.

The existence of a compliance test program with public availability of the test results is a strong inducement to manufacturers to improve their own safety monitoring programs. This is evidenced by the improvements in the motor vehicle industry quality control

programs, and the availability and quality of manufacturer certification data that was examined when problem areas were investigated.

Compliance testing also continues to provide hard data for evaluating existing standards, modifications to standards, proposals for new standards, and processing of the many petitions received by the agency.

A particularly watchful eye is kept on new models as they are introduced into the marketplace. New designs and technology lend themselves to the potential for compliance problems. This is particularly so during model introduction and the early production years.

In 1983, 185 vehicles were subjected to 341 tests for compliance with federal motor vehicle safety standards. The test program for motor vehicle equipment involved 4,787 items such as tires, brake hoses, lamps, safety belts, and child seating systems.

The 1983 test program resulted in 21 recalls involving 533,434 vehicles and 989,680 pieces of equipment. The major equipment campaigns covered 878,080 turn signal and hazard warning flashers imported by K-Mart Corporation, which failed the flash rate, durability, and starting time requirements of Standard No. 108 covering lighting and lighting equipment; and 5,000 child safety seats manufactured by Babyhood Industries, which experienced buckle release during testing. The major vehicle recalls include 409 school buses by United Bus Sales, Mid-Bus and American Transportation Corporation for failure to meet Standard No. 222, "School Bus Passenger Seating" and 206 school buses by Carpenter Body Works for failure to meet Standard No. 221, "School Bus Body Joint Strength." A total of 530,000 vehicles were recalled by Ford Motor Company for failure to meet the requirements of Standard No. 210, "Seat Belt Assembly Anchorages." Additional

recalls were made involving 2,437 mopeds by Herdan, Cosmopolitan and Marina Mobile for failure to meet the requirements of Standard No. 120, "Tire Selection and Rims for Vehicles other than Passenger Cars," Standard No. 122, "Motorcycle Brake Systems, and Standard No. 123, "Motorcycle Controls and Displays."

Child Restraint Systems

Emphasis continued on the compliance testing of child safety seats to ensure that all seats available on the market comply with Standard No. 213, "Child Seating Systems." The seats themselves that were tested were in compliance with NHTSA's dynamic performance criteria, but some individual component parts that were in noncompliance are currently under investigation.

Odometer Tampering

Odometer tampering remains a major problem, particularly involving the four million late model, high mileage, fleet and leased vehicles entering the used car market each year. A professional odometer "clocker" can change the odometer reading of a vehicle in less than three minutes.

NHTSA estimates that about 70 percent of these vehicles have odometers that are turned back at a cost of approximately \$2 billion each year to consumers who unknowingly purchase cars that are "older" than represented.

The problem has become so severe that trade associations representing the three major segments of the used car industry passed resolutions calling for stronger enforcement of the federal odometer laws. In addition, an *ad hoc* committee was organized in 1983 by the National Auto Auction Association to study steps that the industry can take to eliminate odometer fraud. Representatives from all facets of the used car industry, NHTSA, and state enforcement agencies are on this committee.

NHTSA continued its odometer enforcement program, confirming odometer fraud in 73 investigations conducted in 21 states. During these investigations, it was determined that the mileage on at least 302 vehicles had been rolled back. Three cases involving large-scale odometer tampering were turned over to the U.S. Department of Justice for criminal prosecution, and civil penalties were assessed against two dealers with lower numbers of violations. In addition, 23 cases were referred to state enforcement agencies and the results of 45 investigations were given to consumers so that they could take private civil actions to recover damages.

Because of the interstate nature of odometer fraud, NHTSA placed additional emphasis on improving state/federal cooperation in attacking this serious problem. The Annual Odometer Enforcement Conference, which was first organized and sponsored by NHTSA in 1980, attracted representation from 24 states in 1983, a 50 percent increase in state representation from the 1982 conference. These conferences provide for the exchange of intelligence information and techniques relating to investigations and prosecutions between the states.

Imported Motor Vehicles

As a general rule, motor vehicles manufactured after January 1, 1968, must comply with all applicable federal motor vehicle safety standards before they can be imported into the United States, and the U.S. Customs Service requires importers to file a declaration with each entry. Vehicles that are certified by their manufacturers as complying promptly clear Customs.

Vehicles that do not conform can be imported, but a bond is required to assure that the vehicle will be brought into conformity within a reasonable length of time, normally 120 days.

Upon receipt of the Customs declaration by NHTSA, the importer is advised of the specific standards and regulations applicable to the vehicle being imported. The importer is also advised that it is difficult and costly to achieve compliance with certain critical standards, and failure to do so will result in re-export or destruction of the vehicle.

NHTSA handles approximately 575 inquiries each week from potential importers. Information that explains the difficulties involved in importing noncomplying vehicles is widely distributed to help potential importers avoid costly and time-consuming problems. The U.S. Department of State is provided with brochures for distribution to embassies, consulates, and the passport office. Similarly, the Department of Defense distributes these brochures to overseas military installations.

The number of nonconforming vehicles imported into the United States increased in 1983: 12,838 vehicles were imported compared to about 5,530 in 1982 and 2,800 in 1981.

Litigation

Department of Transportation v. State Farm. On April 26, 1983, the U.S. Supreme Court heard oral argument in this case involving NHTSA's 1981 rescission of the passive restraint requirements of Federal Motor Vehicle Safety Standard No. 208. On June 24, 1983, the Court issued its decision, vacating the decision by the U.S. Court of Appeals for the D.C. Circuit, which had invalidated NHTSA's rescission. The Supreme Court held, however, that reasons given by NHTSA to support the rescission were inadequate, and remanded the matter for further consideration by the agency.

Center for Auto Safety v. Steed; State Farm v. DOT (Bumpers). On December 5, 1983, these two consolidated cases to review NHTSA's May 1982 amendment of the bumper standard and NHTSA's October

1982 denial of petitions for reconsideration were argued before the U.S. Court of Appeals for the District of Columbia Circuit. A decision had not been rendered by the end of the year. The challenged amendment reduced the test speed requirement of the standard from 5 mph to 2.5 mph based on the agency's analysis of the cost and benefit factors, which concluded that the reduction would best fulfill the statutory mandate to achieve maximum feasible reduction of costs to the public and the consumer.

Center for Auto Safety v. NHTSA (fuel economy). In this action, the 1981 Center for Auto Safety sought judicial review of the agency's 1981 decision to withdraw an Advance Notice of Proposed Rulemaking concerning possible post-1985 fuel economy standards for passenger cars and light trucks. On June 21, 1983, the United States Court of Appeals for the District of Columbia Circuit dismissed the petition, holding that although the agency's decision was reviewable as a "rule" under the broad definition in the Administrative Procedure Act, the petition for review was premature and could not yet be considered.

Center for Auto Safety v. Barnhart and Steed (55 mph). Petitioners served their complaint for declaratory and injunctive relief in this action on October 25, 1983. They seek to require FHWA and NHTSA to enforce the 55 mph speed limit by rendering a final determination regarding Massachusetts' certification of compliance in FY 1982 with the 55 mph requirement within ten days. On November 30, 1983, the Administrators of FHWA and NHTSA issued their final determination, concluding that Massachusetts was not in compliance with the 55 mph requirement in FY 1982, and also deciding against imposing a penalty for that noncompliance because Massachusetts had come into compliance with the 55 mph requirement in FY 1983.

United States v. General Motors (X-body brakes). On August 3, 1983, the government filed an action seeking the recall of all 1.1 million 1980 model year General Motors X-body cars to correct alleged defects in their braking systems, as well as civil penalties of \$4,027,000. The government's six-count complaint alleged that General Motors knew of defects in the X-car's braking system before the cars went into production, but went ahead and manufactured and sold the cars; subsequently made changes to the braking system design but failed to retrofit the changes onto already-manufactured cars; knowingly conducted two inadequate recalls; failed to provide complete information to the NHTSA during the course of the agency's investigation of the alleged defect; and issued recall notices that did not comply with the agency's regulations. General Motors moved to dismiss the complaint, but that motion was denied on December 1, 1983. Both the government and General Motors moved for summary judgment, in which the Court would have rendered its decision on the basis of documentary evidence without holding a trial. The Court denied both parties' motions.

Public Citizen v. Steed (Uniform Tire Quality Grading). In this action, Public Citizen and the Center for Auto Safety sought judicial review of NHTSA's February 1983 suspension of the treadwear grading requirements of the uniform tire quality grading regulation. Oral argument was held before the U.S. Circuit Court of Appeals for the D.C. Circuit on November 2, 1983. A decision had not been rendered by the end of the year. NHTSA based its indefinite suspension of the variability in test results achieved by both the agency and industry.

U.S. v. Seal Enterprises (automotive flashers). NHTSA obtained a consent judgment and penalty of \$6,200 against an importer of vehicle turn signal and

hazard warning signal flashers that did not meet federal lighting requirements.

U.S. v. B&B Autosport (headlamps). In action to enforce Standard No. 108, an importer of nonconforming headlamps agreed to a consent judgment against it and payment of a penalty of \$20,000.

Administrative Enforcement

Many administrative enforcement actions under the National Traffic and Motor Vehicle Safety Act are settled by accepting payments in lieu of seeking civil penalties through court actions. Section 109 of the Act authorizes NHTSA to collect penalties of up to \$1,000 per violation. In settling these enforcement actions, the agency considers factors such as the gravity of the violation and the size of the business.

Administrative enforcement actions in 1983 under the Act resulted in \$113,500 in civil penalties. Nissan Motor Co. Ltd., and International Harvester each paid \$50,000 for violations of Standards No. 105, "Hydraulic Brake Systems," and No. 212, "Windshield Mounting," respectively. Penalties of \$5,000 each were paid by General Motors for noncompliance with Standard No. 210, "Seat Belt Assembly Anchorages" and by Transportation Products, Inc. for failure to meet Standard No. 222, "School Bus Passenger Seating and Crash Protection." Mid-Bus, Inc. also paid \$1,000 for its failure to meet Standard No. 222. A settlement of \$2,500 was reached with Drag Specialties for noncompliance with Standard No. 108, "Lamps, Reflective Devices and Associated Equipment."

Penalties are also authorized under the Motor Vehicle Information and Cost Savings Act. In 1983, a total of \$7,288 was received from seven motor vehicle dealers for violation of odometer regulations (Part 580).

BLANK PAGE

Consumer Activities

Bumpers

Title I of the Motor Vehicle Information and Cost Savings Act requires NHTSA to issue a bumper standard that will provide the maximum feasible reduction of costs to the public and the consumer. Beginning in model year 1979, the bumper standard required that passenger cars remain undamaged, except for the bumper system itself, in 5 mph front and rear barrier and pendulum impacts. In the following year, model year 1980, the standard was made more stringent by limiting the amount of damage sustained by the bumper itself.

As part of the agency's 1982 rule-making, which resulted in changing the bumper standard from 5 mph to 2.5 mph, NHTSA also issued a Notice of Intent describing future actions planned to encourage and ensure the availability of bumper systems that provide improved damageability performance. One program presented in the Notice involved NHTSA bumper tests to determine performance at impact speeds greater than required by the standard.

As a result, in 1983, NHTSA began an experimental bumper information program to develop objective and meaningful information on the damage susceptibility of automobiles in low-speed front and rear collisions. The work begun in 1983 involved the development of an inexpensive, objective test procedure that would correlate well with actual crash experience. The test procedure is expected to be completed in 1984.

Auto Safety Hotline

NHTSA's toll-free Auto Safety Hotline provides recall information, receives motor vehicle safety defect complaints and furnishes consumers with

information about fuel economy ratings, crash test results, tire safety and care, child safety seats, drunk driving, federal odometer laws, and motor vehicle safety standards.

The Hotline logged more than 219,000 calls in 1983. Sixty percent of the consumers who called the Hotline asked for recall information, eight percent reported safety problems they had experienced with their cars, and six percent sought other consumer information. Twenty-five percent of the calls were referred to other NHTSA offices and/or other federal, state, or local consumer agencies.

The Hotline's normal operating hours are 8:00 a.m. to 4:00 p.m. (Eastern time) Monday through Friday, but calls can be received day or night, seven days a week. During non-business hours, callers are assisted by an automatic telephone answering service.

The nationwide toll-free number is (800) 424-9393 (for the Washington, D.C. metropolitan area, 426-0123). There is also a toll-free Teletym (TTY) number for the hearing impaired, (800) 424-9153, (Washington, D.C. 755-8919). A Spanish-speaking operator is available during normal operating hours.

The Auto Safety Hotline provides consumers with a convenient means to obtain safety-related recall information. A printed copy containing a summary of the recall(s) can also be mailed, usually with 24 hours after request, or the information can be provided immediately over the telephone if it is not too extensive.

The Hotline also provides questionnaires to persons wishing to report vehicle, vehicle equipment or tire safety problems. When the completed questionnaire is received by the agency,

the data is computerized and used to identify trends that may indicate potential safety-related defects. A copy of each questionnaire and a letter requesting assistance in resolving the consumer's problem is sent to the appropriate manufacturer.

Although NHTSA's authority is primarily in the area of safety, many consumers report problems related to warranties, service, sales, etc. — problems that must be resolved by manufacturers, state and local governments, or other federal agencies. As a public service, the Hotline operators have reference material on these agencies to direct consumers quickly to the proper organizations.

Uniform Tire Quality Grading

The National Traffic and Motor Vehicle Safety Act directed NHTSA to establish a rating system for new tires. The Uniform Tire Quality Grading Standards (UTQGS) were conceived as a system that would help consumers choose safe, economical tires by providing ratings in three areas of tire performance:

Treadwear. Numerical ratings should indicate the relative treadwear performance of each tire. A tire graded 150 should give 50 percent more mileage than one rated 100.

Traction. A, B, and C ratings indicate the tire's ability to stop on wet surfaces. Tires graded "A" should stop on a wet road in a shorter distance than ones graded "B" or "C."

Temperature Resistance. Graded A, B, or C. Hot running tires can result in blowouts or tread separation. An "A" means the tire will run cooler than ones rated "B" or "C" and is less likely to fail if driven over long distances at higher speeds.

Technical problems with the UTQGS treadwear tests resulted in such variations that the standard was not helping

consumers and was difficult to enforce. On February 1, 1983, NHTSA issued a final rule suspending the treadwear grading requirements of the UTQGS to avoid dissemination of potentially misleading information on the expected tread life of passenger car tires. The action left unchanged the grading requirements for traction and temperature resistance.

Tire Registration

The House Committee on Energy and Commerce found that "independent dealers" registered only 20 percent of the replacement tires that they sold, compared to between 80 and 90 percent for those businesses owned or controlled by a tire manufacturer. In place of the mandatory registration process for "independents," Congress directed that a voluntary registration process be established. Under the voluntary process, the primary responsibility for registering tires sold by independent dealers is shifted from the dealer to the purchaser.

On April 21, 1983, the agency issued an interim final rule (effective date June 20, 1983) to improve the registration rate of tires purchased from independent tire dealers and distributors. It established a standardized registration form that manufacturers must provide to dealers and distributors under a voluntary tire registration bill signed into law last October.

Tire dealers and distributors that are owned or controlled by the manufacturers were not affected by the action. They must still follow existing procedures under which the dealer records all necessary information on a registration form, which is then returned to the manufacturer.

On April 22, 1983, the agency issued a Notice terminating the rule-making action begun in 1981 to require that tire manufacturers mold the tire

identification number on the outward-facing sidewalls of all passenger car and light truck tires. This action was taken because the agency was unable to determine whether adoption of the proposal would significantly contribute to motor vehicle safety, and because compliance costs were estimated to be between \$4.2 and \$5.9 million.

New Car Assessment Program

The experimental New Car Assessment Program evaluates the relative levels of occupant protection safety performance of new automobiles under controlled crash conditions. The tests are conducted under the provisions of Title II of the Motor Vehicle Information and Cost Savings Act of 1972.

In this program, cars are run head-on at 35 mph into a fixed, rigid barrier. Each car carries two instrumented adult dummies in the front seat; both dummies are restrained by the vehicle's lap and shoulder safety belts. During the crash, readings are taken from each dummy's head, chest, and thighs. These readings and other measurements are used to indicate the relative crash protection to occupants wearing safety belts. Other aspects of vehicle safety performance are also monitored including whether the vehicle retains the windshield, prevents intrusion of vehicle parts into the occupant compartment, and maintains the integrity of the fuel system.

The measurements used to assess crash protection are based on the injury criteria in the 1977 version of Standard No. 208, "Occupant Crash Protection," for cars equipped with automatic (passive) restraints. These criteria specify allowable readings on the dummy's head, chest, and thighs in a 30 mph frontal barrier crash.

The cars are tested at 35 mph to measure relative levels of occupant protection and vehicle safety performance at a test speed 5 mph faster than the prescribed speed for compliance

tests, a speed at which differing performance levels among cars can be noted.

Crash test results were published on 17 model year 1983 cars bringing the total to 110 makes and models that have been tested since the program began in 1979. Because of their popularity in the marketplace, station wagons, light trucks and multipurpose vehicles were crash tested for the first time in 1983 in order to provide more information for consumers.

The results of the 1983 program showed continued improvements in the level of safety of the passenger automobiles tested. The motor vehicle manufacturers are clearly considering occupant crash protection performance during the development of new vehicles.

Also in 1983, the agency completed the first phase of a program to estimate the repeatability and reproducibility of the 35 mph frontal barrier crash tests. Twelve identical 1982 production vehicles were crashed frontally at 35 mph, four at each of three different test sites. Engineering analyses of the data identified four components of crash test variability — the test facility, the test procedures, the test dummy, and the test vehicle. This information was used to improve test procedures, and to direct the start of a research program to further reduce and control the crash test variability resulting from the test facility, test procedures, and test dummy. Future research will provide more detailed insight into the sources of variability as well as methods to control and reduce it. The results were discussed at a public meeting in October 1983.

Consumer Information Regulations

The Consumer Information Regulations require motor vehicle manufacturers to submit to the agency, and make available to first and prospective automobile purchasers, information on

Table 6. 1983 New Car Assessment Program Crash Test Results

Vehicle	Test Speed/Weight	HIC D/P	Chest Resultant D/P	Femur Loads		FMVSS		
				Driver L/R	Pass L/R	212	219	301
Chevrolet Caprice 4-DR	35.3/4120	882/1084	42/47	675/650	600/544	Yes	Yes	Yes
Dodge 600 4-DR	35.2/3110	947/1010	46/48	1180/510	650/580	Yes	Yes	Yes
Ford EXP 2-DR	35.2/2590	1744/796	46/41	1790/420	330/320	Yes	Yes	Yes
Ford Thunderbird 2-DR	35.3/3580	626/795	70/43	625/1200	895/590	Yes	Yes	Yes
Pontiac Firebird 2-DR	35.2/3330	408/376	34/32	900/480	100/125	Yes	Yes	Yes
Toyota Corolla 4-DR Station Wagon	35.3/2760	767/1367	66/43	1823/700	334/353	Yes	Yes	Yes
Volvo 760 GLE 4-DR	35.2/3560	791/778	45/41	1360/286	505/680	Yes	Yes	Yes
Mazda 626 4-DR	35.3/2900	1196/1087	45/56	450/350	260/360	Yes	(*)	Yes
Nissan Pul- sar 4-DR HB	35.4/2460	1139/1134	54/39	230/490	270/1100	Yes	(*)	Yes
Plymouth Reliant 4-DR Station Wagon	35.1/2910	656/1221	52/52	1300/1100	1560/820	Yes	(*)	Yes
Toyota Camry 4-DR	34.9/2980	809/495	48/40	220/370	395/550	Yes	(*)	Yes
Ford Bronco II 4x4	35.4/3845	789/1038	49/50	270/380	440/340	Yes	Yes	Yes

Table 6. 1983 New Car Assessment Program Crash Test Results—Continued

Ford LTD 4-DR	35.2/3563	609/957	69/54	168/58	110/158	Yes	(*)	Yes
Mitsubishi Mighty Max PU	35.2/3094	1475/1934	68/71	240/170	320/200	Yes	Yes	Yes
Mitsubishi Montero 4x4	34.9/3873	1641/1415	54/48	350/127	391/353	Yes	Yes	Yes
Peugeot 505S 4-DR	35.1/3617	819/1157	52/49	NA/NA	NA/319	Yes	(*)	Yes
Toyota Tercel 4-DR Station Wagon 4x4	35.2/2826	839/535	43/42	121/186	274/225	Yes	(*)	Yes

EXPLANATORY NOTES

HIC: Head Injury Criteria. The head injury limit is 1,000.

Chest Resultant: The limit for chest acceleration is 60 g's.

Femur Loads: The femur load limit is 2,250.

HIC, Chest Resultant Acceleration, and Femur Loads: Injury criteria of Federal Motor Vehicle Safety Standard (FMVSS) 208, "Occupant Crash Protection."

D/P: Driver/Passenger
L/R: Left/Right

MEETS CRITERIA OF THE FMVSS AT 35 MPH:

Standard No. 212, "Windshield Mounting," requires that a specific percentage of the windshield mounting remain attached.

Standard No. 219, "Windshield Zone Intrusion," requires that no vehicle parts from outside the occupant compartment may intrude into a defined zone in front of the windshield.

Standard No. 301, Fuel System Integrity," limits the amount of fuel leakage from any part of the fuel system during the crash test, and following the test when a vehicle is slowly rotated through 360 degrees.

* In order to obtain additional dummy data, windshield intrusion limits specified in Standard 219 were not measured.

stopping distance, uniform tire quality grading, and truck camper loading. This information is an outgrowth of the Congressional mandate under the National Traffic and Motor Vehicle Safety Act of 1966, and the agency's belief that an informed marketplace is the key to improving automobile safety and performance. The program helps consumers to compare the relative safety and performance of various domestic and foreign automobiles.

On June 30, 1983, the agency published a Notice of Proposed Rulemaking to delete the requirement that stopping distance information be provided to first purchasers, and denied a 1981 petition from General Motors to rescind the requirements to provide stopping distance information to prospective purchasers and the agency. NHTSA has tentatively concluded that the information given to consumers after they have purchased a new vehicle does not serve a significant safety purpose. Hence, the proposal to delete the requirement for providing this information to first purchasers.

Prospective purchasers can obtain this information from dealers and NHTSA before they select and buy a particular model of vehicle. The information could, therefore, serve a valuable purpose. Thus, the decision for manufacturers to furnish this information to dealers and the agency is retained.

Public Affairs/Consumer Outreach

Keeping the public informed about the safety aspects of motor vehicle travel is a particularly important NHTSA responsibility. As the federal authority on traffic safety issues, the agency cooperates with the national news media, automotive industry trade press, and other information sources to answer questions about agency activities and to provide the public with information that can make motor vehicle travel safer.

NHTSA encourages safe driving practices, alerting motorists to the risks of motor vehicle transportation, informing them about available safety precautions that can reduce the risks, and providing free publications and other consumer information on a variety of automotive topics. The agency also cooperates with the private sector to communicate traffic safety information to the public.

By sponsoring and participating in public exhibits, presentations, workshops, and conferences, NHTSA also is able to discuss informally highway safety issues leading to a better understanding on both sides and fostering workable solutions to traffic safety problems.

Consumer activities during 1983 included:

- o Highway safety fairs at shopping malls in Hollywood, Florida; Portland, Oregon; and Denver, Colorado. These two-to-three-day events were sponsored by NHTSA and local organizations, and included exhibits and free consumer information on drunk driving, safety belts, and child safety seats. There were also special attractions, such as a "drink-in" sponsored by the local police, demonstrations of the "safety belt convincer," and prize drawings for shoppers who signed a pledge to wear their safety belts.
- o Public hearings on the agency's automatic crash protection rule-making. The hearings were held in Los Angeles, Kansas City, and Washington, D.C. Special efforts were made to encourage public participation in the hearings by widely publicizing them.
- o Safety belt promotions in New York City; Reno, Nevada; San Francisco and Los Angeles, California; and Portland, Oregon were conducted in

conjunction with the concert tour of singer/professional race car driver John Oates of the Hall and Oates singing group. Cash prizes and concert tickets, donated by the private sector, were awarded to motorists who displayed the "buckle-up" bumper sticker on their cars and were observed wearing safety belts.

- o Safeway Stores, Inc. printed a safety belt message on its milk cartons and included a drunk driving message on egg nog cartons to promote safe driving during the holidays.
- o A tri-state pilot project, administered through the Supermarket Communications Network, promoted the use of NHTSA's Auto Safety Hotline. The agency stocked Hotline brochures in 723 grocery store outlets in the Connecticut, Michigan (including Toledo, Ohio) and Arizona regions. The project was expanded later in the year to an additional 482 outlets in the

St. Louis, Missouri; Dallas/Fort Worth, Texas; and San Francisco, California areas.

- o Activities for the second annual Drunk and Drugged Driving Awareness Week were coordinated by NHTSA. State and local government and safety groups combined with the private sector placed special emphasis on the danger of drunk and drugged driving. The President personally proclaimed the week at a White House ceremony on December 11. This national emphasis contributed toward making the 1983 holiday season the safest on record.
- o A NHTSA-sponsored "Project Graduation" conference was held in Springfield, Illinois, with students, teachers and parents. Project Graduation is a national movement to discourage drunk driving by offering graduating high school seniors alternative, alcohol-free ways of celebrating. As a result of the conference, "chemical-free" celebrations were organized by cooperative community efforts in 36 states.

BLANK PAGE

National Center for Statistics and Analysis

NHTSA's National Center for Statistics and Analysis develops and operates data collection and analysis programs to support the agency's motor vehicle and highway safety activities. Representative and reliable accident data bases are essential to identifying and analyzing traffic safety problems and measuring the effectiveness of programs to deal with them.

The Center has developed and operates several accident data systems and conducts major studies of accident and exposure data. It also provides information on traffic safety to other parts of the federal government, state and local governments, citizens, industry, researchers, and the international safety community.

The Center obtains information on motor vehicle accidents and exposure by direct field investigation, from police and other government reports and records, and through surveys. It collects data on vehicle occupants, pedestrians, and cyclists; their injuries; vehicles and damage sustained by them; types of collisions; roadway and environmental factors; vehicle use patterns; and exposure of the population to accident risks.

The data are used extensively in the agency's research, rulemaking, traffic safety, enforcement, and evaluation programs. The Center's analyses have documented changes in fatality patterns in accidents, the effectiveness of occupant protection systems, the safety performance of heavy trucks, safety problems with mopeds, and many other aspects of traffic safety.

The Center's major data collection systems are:

- o The Fatal Accident Reporting Systems (FARS). FARS is a census of every fatal motor vehicle accident in the United States. Information for FARS comes from police accident reports, coroner's reports, and state records. Approximately 150 data elements are recorded for each FARS case. FARS has been operating since 1975, and contains data on more than 400,000 traffic fatalities.

- o National Accident Sampling System (NASS). NASS was initiated in 1979 to provide more detailed, nationally representative information on police reported traffic accidents. Initially operating at 10 sites around the country, it has since been expanded to 50 sites that were chosen to be geographically and demographically representative of the country. The 12,000 accidents investigated by NASS each year are selected by a statistical sampling procedure so that the data collected can be expanded to estimate national statistics on traffic accidents.

For each case in NASS, the investigator documents the scene of the accident, measures and classifies damage to the vehicles, obtains medical records and codes injuries, interviews survivors and witnesses, and obtains records on the drivers and vehicles involved.

- o Special Interest Accident Investigations. The Center has five teams under contract to conduct detailed investigations of selected special interest accidents. These include fatal school bus accidents, accidents involving cars equipped with

Table 7. Data Acquisition and Statistical Analysis

Research Accomplishment	Applications
Continued operation of the National Accident Sampling System (NASS).	To provide detailed data and nationally representative statistics on motor vehicle accidents. NASS investigates about 12,000 accidents each year at 50 sites across the country.
Operated the Fatal Accident Reporting System (FARS).	To provide NHTSA with a continuous census of nationwide fatal accident information to support safety improvements in vehicle crashworthiness, crash avoidance measures, highway design, and driver behavior. 1983 was the ninth year of FARS' operation.
Completed an analysis of passenger car steering column performance.	To compare the crash performance of different energy-absorbing steering columns and investigate whether design improvements may be possible.
Studied the 14 percent traffic fatality reduction that occurred from 1980 to 1982.	To examine patterns and seek causes for the dramatic decrease in fatalities. Some factors studied included alcohol involvement, economic influences, and population shifts.
Began a series of bimonthly "Fatality Trend" reports.	To illustrate how fatality patterns have changed in the eight years of FARS data and to gain insight into present and future changes.

Table 7. Data Acquisition and Statistical Analysis--Continued

Research Accomplishments	Applications
Prepared annual FARS and NASS reports.	To make extensive FARS and NASS annual data available to the public.
Compared large- and small-car involvement in rear-end accidents.	To help estimate benefits for rulemaking on center, high-mounted stop lights.
Analyzed data from a series of sixteen crash tests of identical vehicles.	To assess the variability in crash tests.
Developed a methodology for combining NASS and FARS data to yield state level estimates.	To increase the potential usefulness of NASS data.
Prepared a discussion of NASS data from a user's point of view.	To assist NASS data users.
Analyzed the performance of Volkswagen Rabbit safety belts in fatal accidents.	To compare the performance of Volkswagen's active and passive safety belt systems.
Continued a study of truck brakes based on data from the Bureau of Motor Carrier Safety accident files.	To investigate truck brake performance.
Continued the investigation of special interest accidents (air bags, brakes, and school buses).	To support NHTSA safety activities.
Conducted analysis of FARS and NASS data to estimate alcohol involvement in traffic accidents.	To make national estimates of the incidence of alcohol involvement in fatal, injury producing, and property damage accidents.

Table 7. Data Acquisition and Statistical Analysis--Continued

Research Accomplishments	Applications
Began implementation of an exposure survey in the Boston, Massachusetts, area.	To assess the relative accident involvement of small and large cars in different circumstances and to develop data collection procedures that can be used in a national exposure survey.

air bags or other special safety equipment, and accidents involving vehicles with alleged safety defects. The quick response capability of these teams enables the Center to begin investigating an accident anywhere in the country usually within hours of its occurrence.

- o Monthly Fatality Reports. Early reports from each state on the previous month's fatalities are combined in a monthly report. These early estimates provide prompt notification of national fatality trends.
- o The Head and Neck Injury Study. This project is studying head and neck injuries, the most serious class of injury from traffic accidents. Starting with people admitted to the shock/trauma unit of the Washington (D.C.) Hospital Center, a special investigation team investigates and reconstructs the accident that caused the injury, identifies the interior vehicle component(s) struck by the occupant, and measures the forces involved in the accident. The team then tracks the patient through his or her medical treatment and rehabilitation.

Harmonization of Regulations

The international harmonization of motor vehicle safety standards is a NHTSA priority because the automotive industry is becoming increasingly international in vehicle design. The advent of the "world car" concept has brought to the forefront the issue of design variations that must be produced in order to comply with differing regulations in world markets. Countries often require conflicting performance standards, safety test procedures, compliance criteria, and means of certifying compliance. These differing regulations make it technically burdensome for manufacturers to construct vehicles for

domestic and foreign markets. Incompatible rules also can serve as non-tariff trade barriers that are costly to consumers and industry.

A successful harmonization program will result in increased production, marketing flexibility, and cost savings to vehicle manufacturers and ultimately consumers, without compromising safety. In some cases, harmonization will actually promote safety by upgrading standards and will encourage the sharing of safety technology by removing the differences between domestic and export vehicles.

It is likely that evolving automotive standards in developing nations will follow patterns established by the European community. If U.S. manufacturers are to have attractive competitive opportunities in those markets, it is important to reduce or eliminate inconsistencies between U.S. and European standards, without compromising safety.

The principal forum for harmonization negotiations is the United Nations Economic Commission for Europe (ECE). The Commission was established at the end of World War II and the U.S., represented by NHTSA, is a full voting member. Within the ECE, motor vehicle harmonization is negotiated at Working Party 29 (WP29) and its eight technical sub-units, called Groups of Rap-porteurs.

In addition to relying upon NHTSA's technical and policy expertise, the Commission's harmonization effort involves input from the industry and consumers and is fully coordinated with the federal international trade community.

On August 1, 1983, NHTSA published a Notice of Proposed Rulemaking to harmonize certain portions of FMVSS No. 108, "Lamps, Reflective Devices, and Associated Equipment," with European rules. The notice proposes changes in

rear yellow turn signal photometrics, license plate lamp requirements, test grids for stop, turn, parking and tail lights, and minimum mounting height of headlamps.

In addition, a research project was underway to determine the feasibility of lowering the minimum requirements for stop lamp intensity to be more in line with European standards.

Since 1980, NHTSA has actively participated in efforts to harmonize the brake safety standards of Europe, North America, and Japan. An ad hoc group within the Group of Rapporteurs on Brakes and Running Gear (GRRF) of the ECE has held six meetings between November 1980 and April 1983 for the

purpose of developing a harmonized brake regulation for passenger cars. NHTSA participated in all these meetings. The proposed harmonized test procedure and tentative performance requirements were presented to the full GRRF for consideration at its December 1983 meeting. In support of this effort, a two-year research and testing program, conducted by NHTSA and industry, involving a total of 45 car models, was completed in 1983. A Notice of Proposed Rulemaking on the subject is planned for 1985.

In addition, NHTSA participated in the work of the International Standards Organization (ISO) on vehicle-related technical issues, and also participated in the biomechanical research meetings of the Commission of European Communities.

Management Improvements

In response to the President's direction that federal agencies reduce costs and improve efficiency, the NHTSA fiscal year 1983 Cost Avoidance, Reduction and Efficiency (CARE) program achieved a savings of \$5.2 million, double the FY 1982 accomplishment.

The agency's total employment decreased from 619 full-time permanent positions at the end of 1982 to 579 in 1983.

As required by the Federal Managers' Financial Integrity Act and Office of Management and Budget (OMB) Circular A-123, a system for evaluating and reporting on NHTSA's internal methods and procedures for safeguarding resources, assuring accuracy and reliability of information, adherence to laws, regulations, and policies was developed. A cursory review of 121 functional areas was completed to determine the level of vulnerability to fraud, waste, abuse, and mismanagement. More extensive reviews were conducted in 37 areas rated highly or moderately vulnerable.

An automated contract management system was established to improve operating efficiency by making contract information readily available to contract staff and to provide numerous contract management reports, i.e., the status of requisitions, contracts, or modifications.

The agency also upgraded its financial management activities under the "Reform '88" program announced by

President Reagan in September 1982. For example, cash management procedures were revised to avoid the costs of late payments to vendors. NHTSA was commended for these improvements by the Secretary of the Treasury and the Director, OMB.

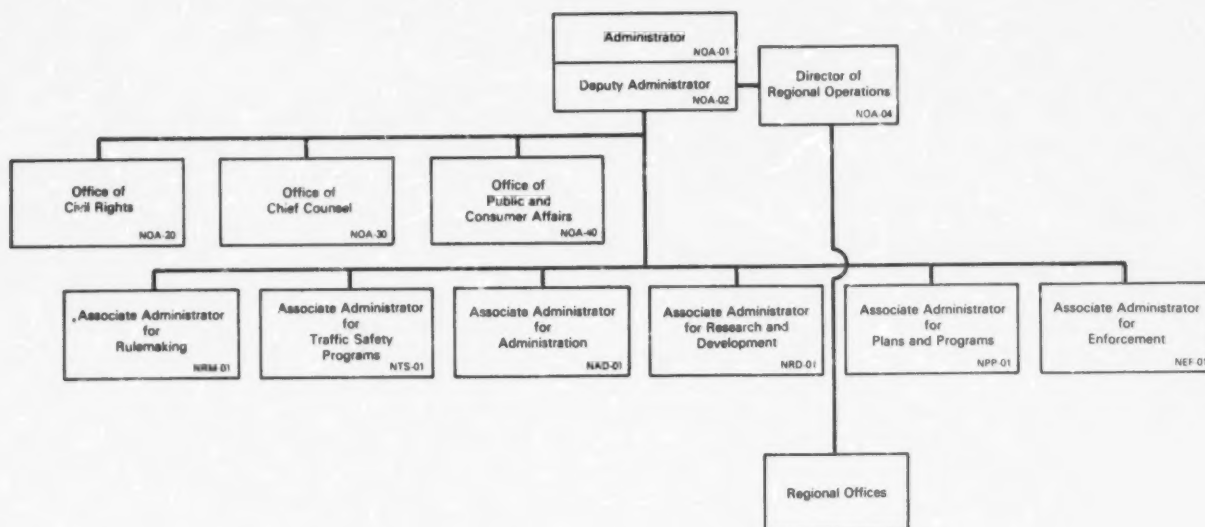
Civil Rights

Even with an overall staff reduction in 1983, minority employment at the agency increased from 23 percent to 24 percent. The percentage of female employment remained unchanged at 33 percent of the total workforce. Notably, the number of minorities and women who received employee awards and promotions exceeded their percentages of the total workforce.

NHTSA continued to provide resources for programs to bring about affirmative implementation of the equal employment opportunity program, such as the Federal Women's, Hispanic Employment and other special emphasis programs and activities.

For example, in response to the President's mandate to upgrade the status of women in the federal workforce, the Federal Women's Program received added emphasis. In addition to the agency's participation in the Secretary of Transportation's initiatives to improve the status of women within the Department, NHTSA began a program that offers women increased training and educational opportunities to make them more competitive for supervisory, management, and executive level opportunities.

Table 8. National Highway Traffic Safety Administration



Appendix A
Statistical Compilation

LIST OF TABLES

<u>Table</u>	<u>Page</u>	
A-1	A-5	Basic Data Pertaining to Motor Vehicle Traffic Accidents, United States, 1963-1983
A-2	A-8	Fatality Rates for the United States and Selected Foreign Countries, 1981
A-3	A-8	Basic Statistics About Motor Vehicle Traffic Deaths in the United States, 1963, 1972-1983
A-4	A-13	Growth in Population and Motor Vehicle Registration, 1972, 1982-1983
A-5	A-13	Types of Motor Vehicles Involved in Fatal Accidents, 1982-1983
A-6	A-14	Comparison of Number of Miles Traveled Annually by Type of Vehicle, 1982-1983
A-7	A-14	Passenger Car Occupant Fatalities by Size of Car, 1975-1983, in Single Vehicle Fatal Accidents (Unknowns have been Distributed in Table*)
A-8	A-15	Passenger Car Occupant Fatalities by Size of Car, 1975-1983, in Multiple Vehicle Fatal Accidents (Unknowns have been Distributed in Table*)
A-9	A-16	Comparison of Driver Fatalities in Two-Vehicle Accidents Among Vehicles of Different Sizes, 1980-1983 (Combined)
A-10	A-16	Fatality Rates and Vehicle Involvement Rates by Vehicle Type (in Fatal Accidents), 1983
A-11	A-21	Percent Distribution, by Age, of Drivers Involved in Fatal Accidents, 1983
A-12	A-21	Percent Distribution, by Age, of Male Drivers Involved in Fatal Accidents, 1983
A-13	A-22	Percent Distribution, by Age, of Female Drivers Involved in Fatal Accidents, 1983
A-14	A-22	Traffic Fatalities by Age Group - 1975, 1982, 1983
A-15	A-23	Number and Distribution of Motor Vehicle Traffic Fatalities by Type, 1963-1983
A-16	A-23	Number and Population Death Rate of Motor Vehicle Traffic Fatalities by Type in the Accident, 1963-1983
A-17	A-25	Leading Causes of Death by Age and Sex, United States, 1981

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>	
A-1	A-6	Motor Vehicle Traffic Fatalities by State, 1983, and Percent Change from 1982
A-2	A-7	Motor Vehicle Traffic Death Rate, 1983, and Percent Change from 1982
A-3	A-9	Trends in Vehicle Mileage and Mileage Death Rate, 1963-1983
A-4	A-9	Trends in Motor Vehicle Registrations, Licensed Drivers and Vehicle Miles of Travel, 1963-1983
A-5	A-10	Trend in Motor Vehicle Death Rates, 1963-1983
A-6	A-10	Trend in Ratios of Registered Vehicles to Drivers and Population, 1962-1982
A-7	A-11	Comparison of Traffic Deaths and Industrial Production Index, U.S., 1963-1983
A-8	A-11	Monthly Death Rates for 1972, 1973, and 1983
A-9	A-12	Weekend-Weekday Contrast in Fatality Rates, 1983
A-10	A-12	Total Motor Vehicle Travel, 1963-1983
A-11	A-17	Motor Vehicle Travel on the Interstate Highway System, 1975-1983
A-12	A-17	Motor Vehicle Travel on Non-Interstate Highway Systems, 1975-1983
A-13	A-18	Licensed Drivers and Population by Age Group, 1983
A-14	A-18	Percent Increase in Licensed Drivers and Population by Age Group, 1973-1983
A-15	A-19	Distribution of Male Licensed Drivers and Population by Age Group, 1983
A-16	A-19	Percent Increase in Male Licensed Drivers and Population by Age Group, 1973-1983
A-17	A-20	Distribution of Female Licensed Drivers and Population by Age Group, 1983
A-18	A-20	Percent Increase in Female Licensed Drivers and Population by Age Group, 1973-1983
A-19	A-24	Pedestrian and Motor Vehicle Occupant Fatalities, 1963-1983
A-20	A-24	Motorcycle and Bicycle Fatalities, 1963-1983

Table A-1. Basic Data Pertaining to Motor Vehicle Traffic Accidents, United States, 1963-1983

Year	Resident Population (Thousands)	Licensed Drivers (Thousands)	Registered Motor Vehicles (Thousands)	Vehicle Miles Traveled (Billions)	Traffic Deaths	Mileage Death Rate (Deaths per Hundred-Million Vehicle Miles)
1963	188,483	93,573	83,483	805	41,723	5.18
1964	191,141	95,468	87,299	846	45,645	5.39
1965	193,526	98,502	91,740	888	47,089	5.30
1966	195,576	100,998	95,703	926	50,894	5.50
1967	197,457	103,172	98,859	964	50,724	5.26
1968	199,399	105,410	102,987	1,016	52,725	5.19
1969	201,385	108,306	107,412	1,062	53,543	5.04
1970	203,984	111,543	111,242	1,110	52,627	4.74
1971	206,827	114,426	116,330	1,179	52,542	4.46
1972	209,284	118,414	122,557	1,260	54,589	4.33
1973	211,357	121,546	130,025	1,313	54,052	4.12
1974	213,342	125,427	134,900	1,281	45,196	3.53
1975	215,465	129,791	137,913	1,328	44,525	3.35
1976	217,563	134,036	143,476	1,402	45,523	3.25
1977	219,760	138,121	147,262	1,467	47,878	3.26
1978	222,095	140,844	153,637	1,545	50,331	3.26
1979	224,567	143,284	159,621	1,529	51,093	3.34
1980	227,236	145,299	161,614	1,528	51,091	3.34
1981	229,518	147,075	164,118	1,556	49,301	3.17
1982	231,786	150,310	165,203	1,592	43,945	2.76
1983*	233,981	154,221	169,446	1,649	42,584	2.58

SOURCES: Vehicle Travel, Registered Vehicles and Licensed Drivers from Federal Highway Administration, Highway Statistics Division.
 Population: U.S. Bureau of the Census (July 1 estimate).
 Traffic Deaths, 1963-74, from National Center for Health Statistics, H.H.S. and State Accident Summaries (Adjusted to 30-day traffic deaths).
 1975-83 from Fatal Accident Reporting System (FARS), NHTSA, (30-day traffic deaths).

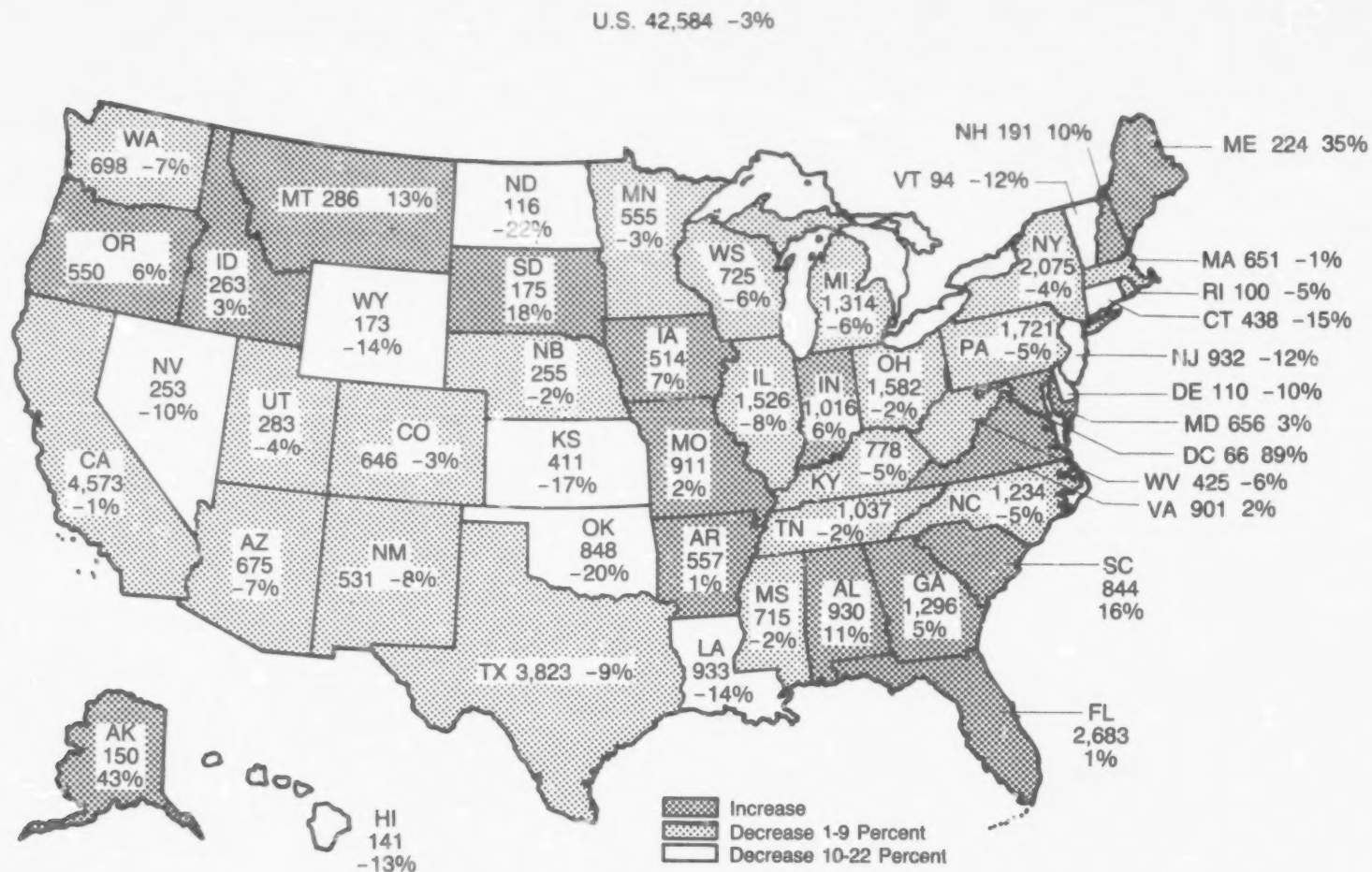
*Provisional.

BLANK PAGE

BLANK PAGE

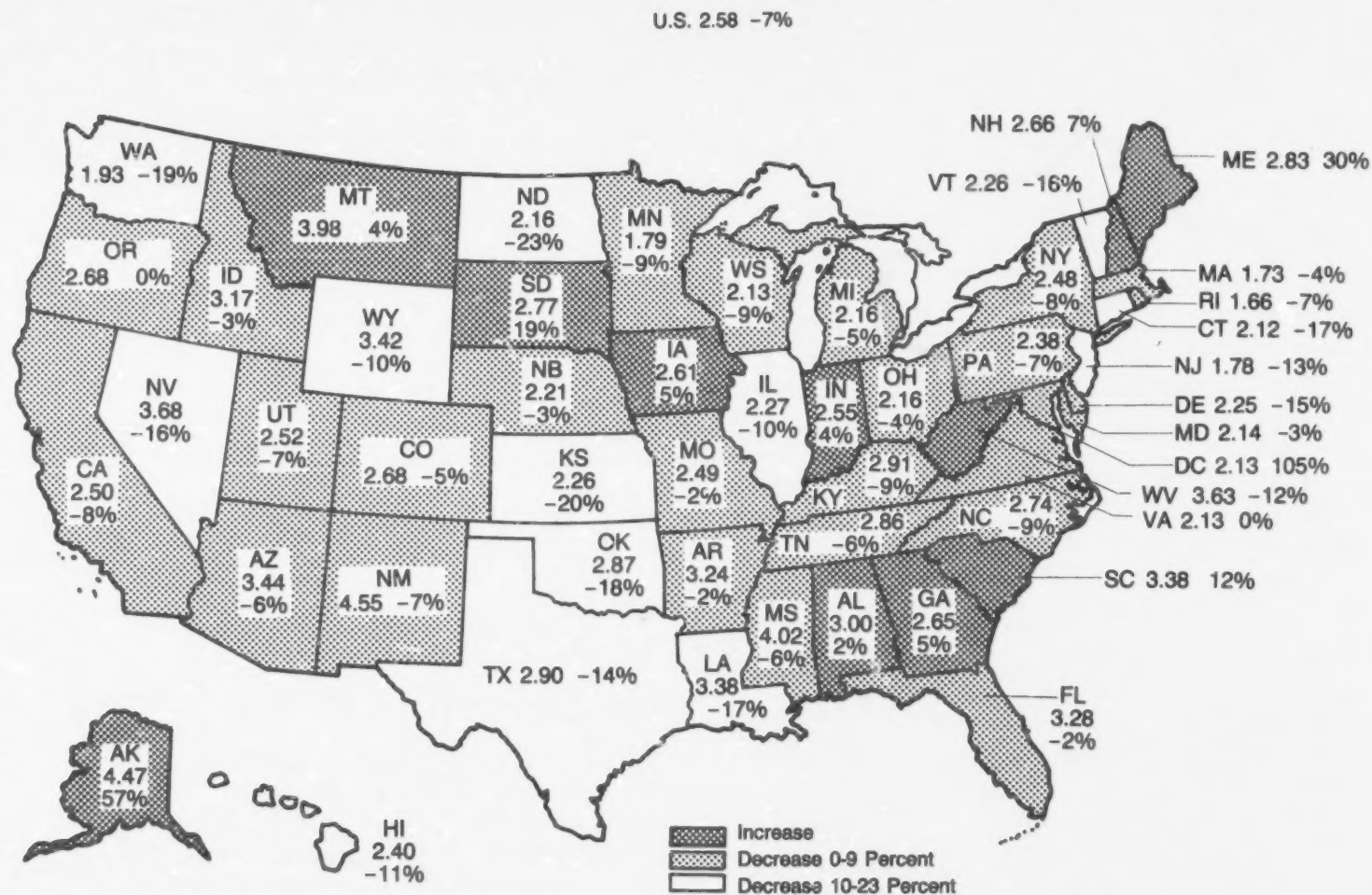
BLANK PAGE

Figure A-1. Motor Vehicle Traffic Fatalities by State, 1983, and Percent Change from 1982



NOTE: (1) Fatalities are from the Fatal Accident Reporting System (FARS), NHTSA.
 (2) In 1983, 33 of the States showed a decrease in traffic fatalities compared to 1982.

Figure A-2. Motor Vehicle Traffic Death Rate, 1983, and Percent Change from 1982



SOURCE: Fatalities — Fatal Accident Reporting System (FARS), NHTSA. Vehicle mileage — Based on preliminary estimates from automatic traffic recorder data supplied to Federal Highway Administration. Death Rate = Deaths per 100,000 vehicle miles.

NOTE: In 1983, 40 States showed a decrease in their vehicle mileage death rate.

Table A-2. Fatality Rates for the United States and Selected Foreign Countries, 1981

Country	Passenger Car Occupant Fatalities		All Fatalities	
	Fatalities per 100 Million Vehicle-Kilometers	Fatalities per 10,000 Registered Cars	Fatalities per 100 Million Vehicle-Kilometers	Fatalities per 10,000 Population
Austria	3.6	3.8	5.7	2.5
Belgium	3.5	3.7	N/A	2.2
Germany	2.0	2.4	3.6	1.9
Great Britain	1.1	1.5	2.2	1.1
Netherlands	1.5	1.9	2.7	1.3
Norway	1.1	1.3	1.9	0.8
Spain	4.6	2.4	9.1	1.8
Sweden	1.0	1.5	N/A	0.9
Switzerland	1.4	2.0	N/A	1.8
United States	1.5	2.3	2.0	2.1

SOURCE: Statistics of Road Traffic Accidents in Europe, United Nations. Trends in Road Accidents, European Conference of Ministers of Transport.

Table A-3. Basic Statistics about Motor Vehicle Traffic Deaths in the United States, 1963, 1973-1983

Item	1963	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Deaths	41,723	54,052	45,196	44,525	45,523	47,878	50,331	51,093	51,091	49,301	43,945	42,584
Percent Change from Previous Year		-1.0	-16.4	-1.5	+2.2	+5.2	+5.1	1.5	0.0	-3.5	-10.9	-3.10
Motor Vehicle Travel (Billions of vehicle miles)	805	1,313	1,281	1,328	1,402	1,467	1,545	1,529	1,528	1,556	1,592	1,649
Registered Motor Vehicles (100,000)	835	1,300	1,349	1,379	1,435	1,473	1,536	1,596	1,616	1,641	1,653	1,694
Resident Population (100,000)	1,885	2,114	2,133	2,155	2,176	2,198	2,221	2,246	2,272	2,293	2,315	2,340
Licensed Drivers (100,000)	936	1,215	1,254	1,298	1,340	1,381	1,408	1,433	1,453	1,471	1,503	1,542
Death Rates												
Per Hundred Million Vehicle Miles	5.18	4.12	3.53	3.35	3.25	3.26	3.26	3.34	3.34	3.17	2.76	2.58
Percent Change from Previous Year		-4.8	-14.3	-5.1	-3.0	+3	0.0	+2.5	0.0	-5.1	-12.9	-6.52
Per 100,000 Registered Vehicles	49.97	41.57	33.50	32.28	31.73	32.51	32.76	32.01	31.62	30.04	26.59	25.13
Per 100,000 Resident Population	22.13	25.57	21.18	20.66	20.92	21.79	22.66	22.75	22.49	21.50	18.98	18.20
Per 100,000 Licensed Drivers	44.58	44.47	36.03	34.31	33.96	34.66	35.74	35.86	35.16	33.52	29.24	27.61
Vehicle & Driver Relationships												
Ratio, Registered Motor Vehicles to Licensed Drivers	0.89	1.07	1.08	1.06	1.07	1.07	1.09	1.11	1.11	1.12	1.10	1.10
Ratio, Registered Motor Vehicles to Resident Population	0.44	0.62	0.63	0.64	0.66	0.67	0.69	0.71	0.71	0.72	0.71	0.72
Ratio, Licensed Drivers to Resident Population	0.50	0.58	0.59	0.60	0.62	0.63	0.63	0.64	0.64	0.64	0.65	0.65

P = Provisional.

SOURCES: Deaths: 1963-74, estimated by NHTSA from data supplied by the National Center for Health Statistics, H.H.S., and State Accident Summaries (Adjusted to 30-day deaths).
1975-83 from Fatal Accident Reporting System (FARS), NHTSA.

Figure A-3. Trends in Vehicle Mileage and Mileage Death Rate, 1963-1983

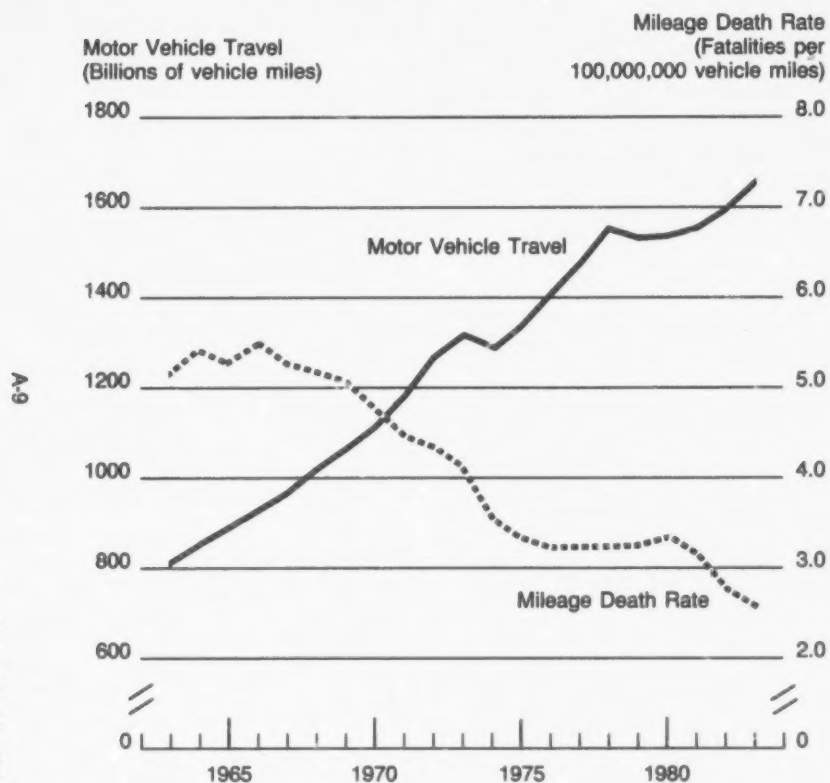
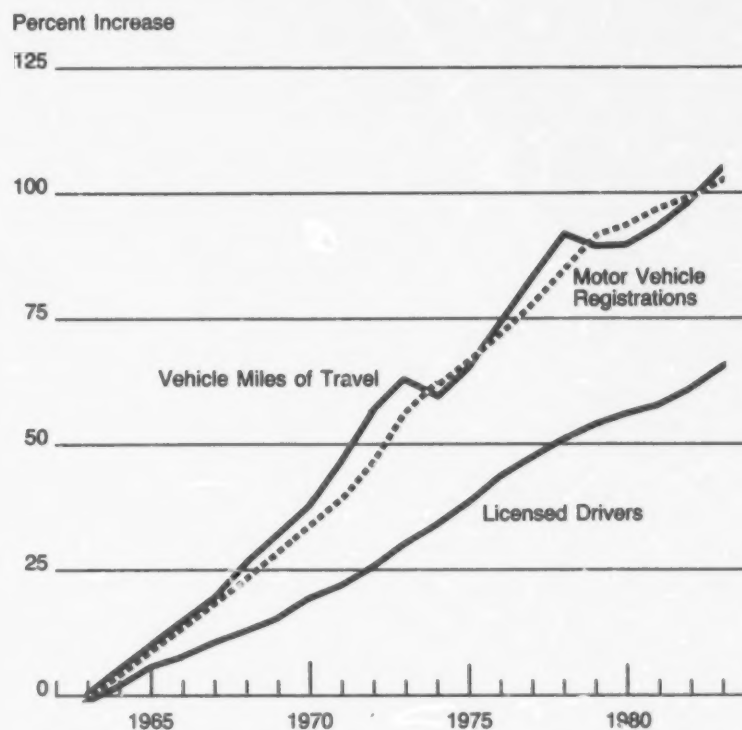
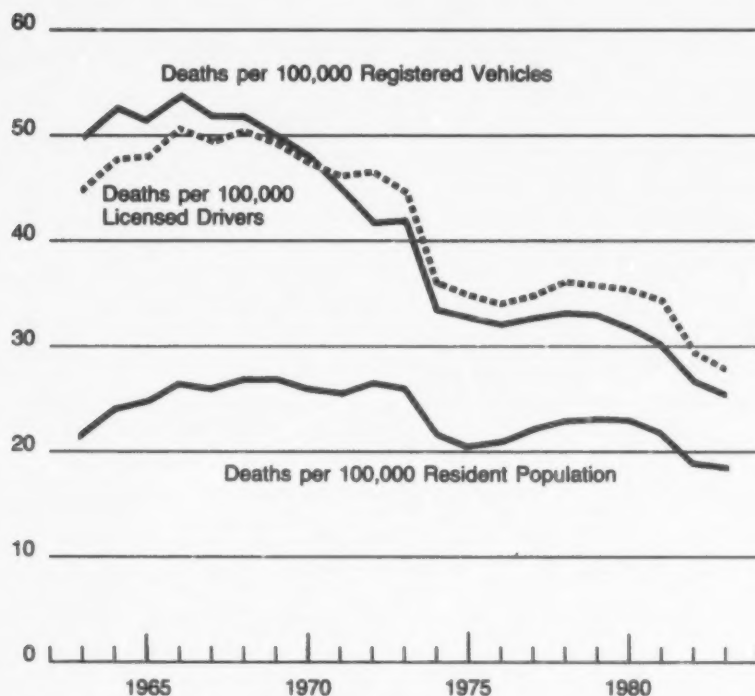


Figure A-4. Trends in Motor Vehicle Registrations, Licensed Drivers and Vehicle Miles of Travel, 1963-1983



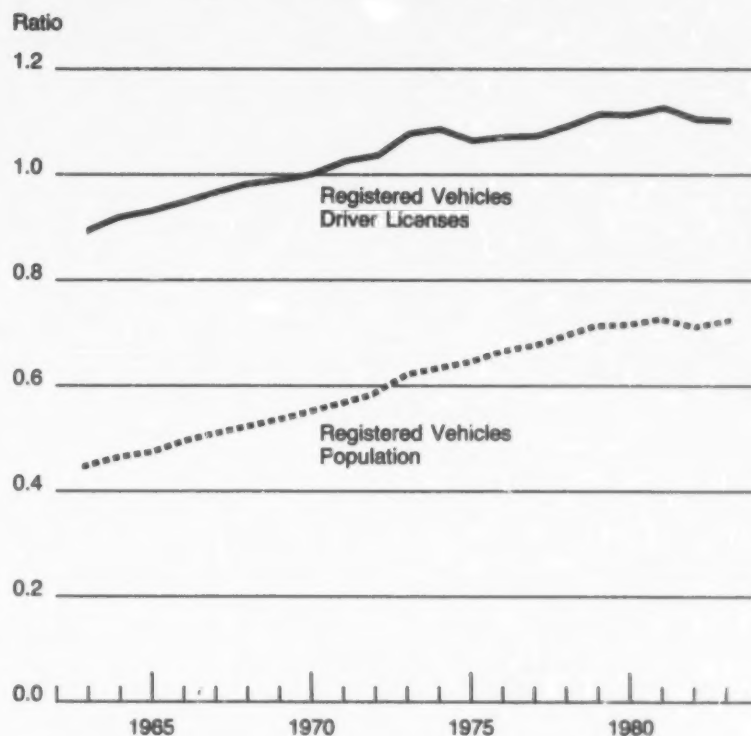
SOURCE: Federal Highway Administration, Highway Statistics Division.

Figure A-5. Trend in Motor Vehicle Death Rates, 1963-1983



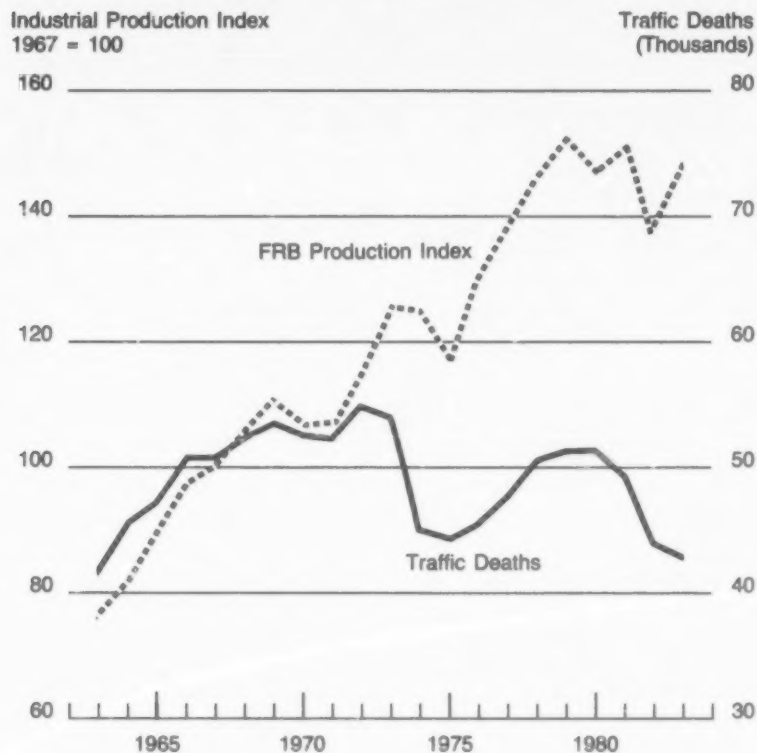
SOURCES: Deaths: 1962-74, National Center for Health Statistics and State Accident Summaries (adjusted to 30-day traffic deaths); 1975-83, The Fatal Accident Reporting System (FARS), NHTSA.
 Vehicle travel, registered vehicles, and licensed drivers; Federal Highway Administration, Highway Statistics Division.
 Population: Bureau of the Census.

Figure A-6. Trend in Ratios of Registered Vehicles to Drivers and Population, 1963-1983



SOURCES: Registered Vehicles and Licensed Drivers: FHWA, Highway Statistics Division.
 Population: Bureau of the Census.

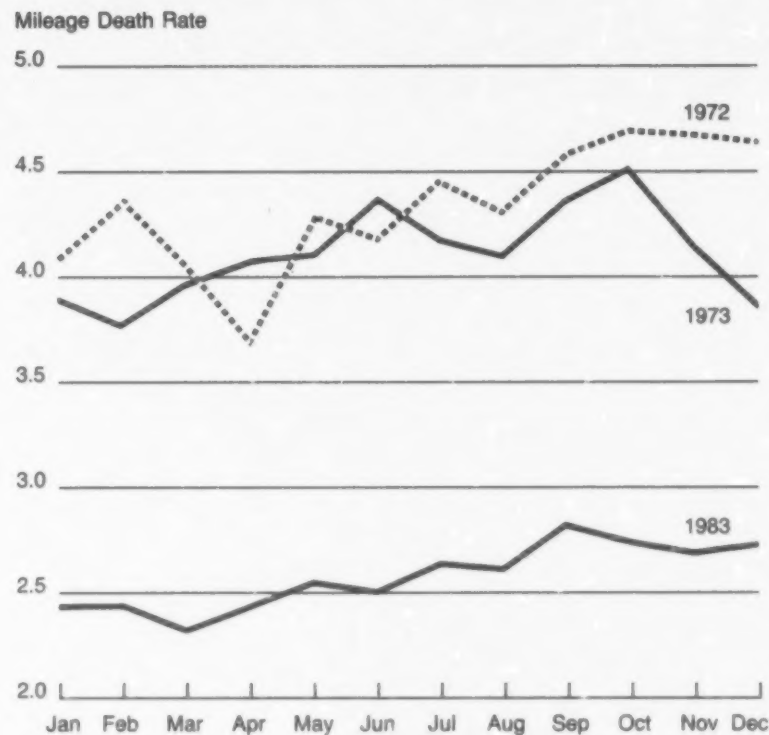
Figure A-7. Comparison of Traffic Deaths and Industrial Production Index, U.S., 1963-1983



SOURCES: Federal Reserve Board.
Deaths: 1963-74, National Center for Health Statistics.
1975-83, Fatal Accident Reporting System (FARS), NHTSA.

NOTE: From 1963 to 1966, the annual changes in highway fatalities corresponded closely with changes in the Federal Reserve Board Industrial Production Index. Clearly both trends had many common causative factors. Beginning in 1967, however, the rate of increase in highway deaths has fallen behind that of the Industrial Index, although similarities in the two trends are still apparent.

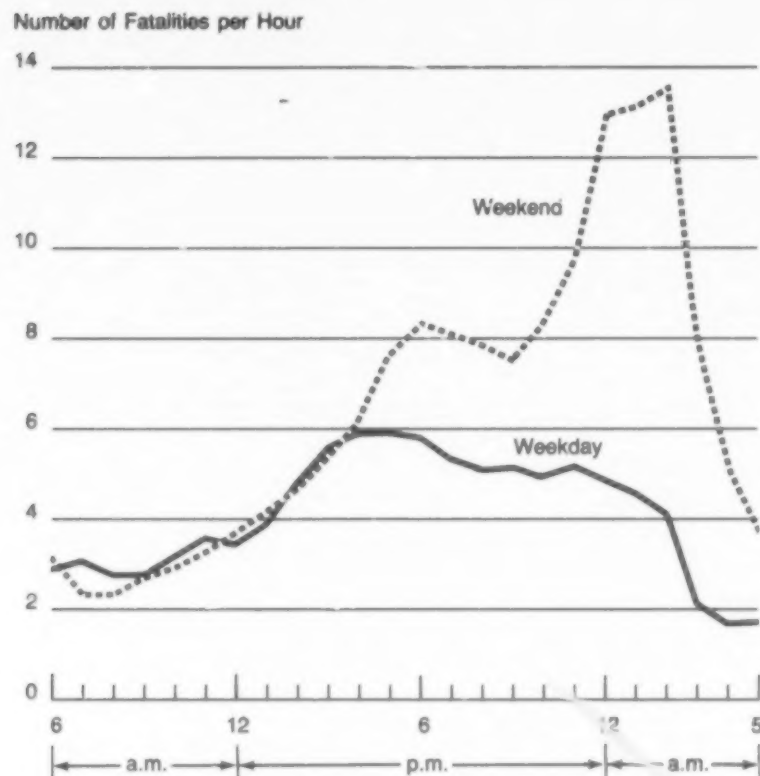
Figure A-8. Monthly Death Rates, for 1972, 1973, and 1983



SOURCE: Mileage data supplied by Federal Highway Administration.

NOTE: The graph for 1973, when compared to 1972, illustrates the general trend of annual reduction since the Highway Safety Act of 1966. The sharp drop that occurred at the end of 1973 and continued through 1980 also reflects the change in automobile use resulting from the energy crisis.

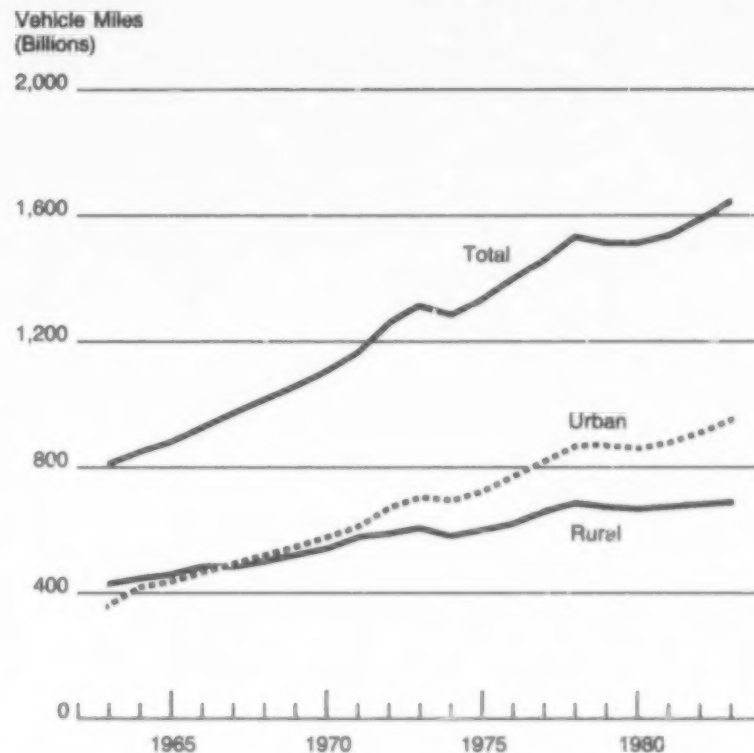
Figure A-9. Weekend-Weekday Contrast in Fatality Rates, 1983



SOURCE: Fatal Accident Reporting System (FARS), NHTSA.

NOTE: Weekend crashes (6 p.m. Friday — midnight Sunday) produce many more fatalities in the evening and early morning hours than do weekday crashes. This is primarily a result of increased recreational driving on weekend nights and associated increased use of alcohol.

Figure A-10. Total Motor Vehicle Travel, 1963-1983



SOURCE: Federal Highway Administration.

Table A-4. Growth in Population and Motor Vehicle Registration, 1972, 1982-83

	1972	1982	Ave. Annual Percent Increase 1972-1982	Percent Increase 1972-1982	1983	Percent Change 1982-1983
Total Registered Motor Vehicles	122,303,701	165,203,024	3.05	35.08	169,446,261	+2.57
Automobiles	96,859,746	123,746,128	2.48	27.76	126,727,870	+2.41
Trucks	21,239,163	35,143,838	5.16	65.47	36,547,781	+3.99
Schoolbuses	316,421	445,732	3.48	40.87	474,277	+6.40
Commercial Buses	90,533	113,468	2.28	25.33	111,238	-1.97
Motorcycles	3,797,838	5,753,858	4.24	51.50	5,585,112	-2.93
U.S. Resident Population, July 1	209,284,000	231,786,000	1.03	10.75	233,981,000	+0.95
Registered Motor Vehicles per Capita	0.59	0.72	1.87	20.34	0.72	+1.41

SOURCES: Federal Highway Administration.
U.S. Bureau of the Census.

Table A-5. Types of Motor Vehicles Involved in Fatal Accidents, 1982-1983

Type of Vehicle	Percent of All Vehicles Registered		Percent of All Vehicles in Fatal Accidents	
	1982	1983	1982	1983
Passenger Car	74.9	74.8	60.8	60.4
Motorcycle	3.5	3.3	8.0	7.8
Commercial Bus	0.1	0.1	0.3	0.4
Schoolbus	0.3	0.3	0.2	0.2
Single-Unit Truck	20.5	20.8	20.1	20.4
Pickup and Van	—	—	(18.0)	(18.0)
Other S.U. Truck	—	—	(2.1)	(2.4)
Multiunit Truck	0.7	0.7	6.4	6.8
Other	—	—	4.2	4.0

SOURCES: Accident data: NHTSA Fatal Accident Reporting System (FARS), NHTSA.
Registration data: Federal Highway Administration.

NOTE: Motorcycles and heavy trucks are over-represented in fatal accidents. The weight of trucks makes them especially lethal in highway accidents while motorcycles are extremely vulnerable to injury.

Table A-6. Comparison of Number Miles Traveled Annually by Type of Vehicle, 1982-1983

Type of Vehicle	Total Travel*			Average Annual Travel Per Vehicle		
	1982	1983	% Change	1982	1983	% Change
Passenger Cars	1,179,623	1,221,846	+3.6	9,533	9,641	+1.1
Motorcycles	12,000	12,000	0.0	2,086	2,149	+3.0
Commercial Buses	3,577	3,648	+2.0	31,524	32,795	+4.0
Schoolbuses	3,062	3,098	+1.2	6,870	6,532	-4.9
Single-Unit Trucks	332,509	342,484	+3.0	9,805	9,705	-1.0
Multiunit Trucks	61,700	66,030	+7.0	50,075	52,424	+4.7
All Motor Vehicles	1,592,481	1,649,106	+3.6	9,640	9,732	+1.0

*Million of vehicle miles.

SOURCE: Federal Highway Administration.

Table A-7. Passenger Car Occupant Fatalities by Size of Car, 1975-1983 in Single Vehicle Fatal Accidents (Unknowns Have Been Distributed in Table*)

Size	1975	1976	1977	1978	1979	1980	1981	1982	1983	Percent Change 1975-83	Percent Change 1982-83
Total	12,431	12,676	12,474	12,864	12,929	13,480	12,539	10,879	10,603	-14.7	-2.5
Percent	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)		
Small	1,741	1,800	2,006	2,034	2,297	2,503	2,573	2,325	2,341	+34.5	+0.7
Subcompact	(14)	(14)	(16)	(16)	(18)	(19)	(20)	(21)	(22)		
Subcompact	751	791	877	1,011	1,183	1,408	1,501	1,469	1,485	+95.1	+1.1
	(6)	(6)	(7)	(8)	(9)	(10)	(12)	(13)	(14)		
Small	445	471	404	481	509	562	624	625	638	+43.4	+2.1
Compact	(4)	(4)	(3)	(4)	(4)	(4)	(5)	(6)	(6)		
Compact	2,618	2,637	2,496	2,631	2,854	3,097	2,708	2,366	2,256	-13.8	-4.6
	(21)	(21)	(20)	(20)	(22)	(23)	(22)	(22)	(21)		
Intermediate	4,483	4,451	4,349	4,333	3,963	3,755	3,422	2,792	2,655	-40.8	-4.9
	(36)	(35)	(35)	(34)	(31)	(28)	(27)	(26)	(25)		
Full-Size	2,383	2,526	2,342	2,374	2,123	2,155	1,711	1,302	1,228	-48.5	-5.7
	(19)	(20)	(19)	(18)	(16)	(16)	(14)	(12)	(12)		

SOURCE: Fatal Accident Reporting System (FARS), NHTSA.

NOTE: The classification of passenger cars reflects the following groupings by "wheelbase" dimensions:

- Small Subcompact -- Less than or equal to 96 inches
- Subcompact -- Greater than 96-101 inches inclusive
- Small Compact -- Greater than 101-106 inches inclusive
- Compact -- Greater than 106-111 inches inclusive
- Intermediate -- Greater than 111-120 inches inclusive
- Full-Size -- Greater than 120 inches

*The following passenger car occupant fatalities, where the wheelbase was unknown, have been included in the table and distributed in proportion to the fatalities where the size of the car was known.

Unknown Size	4,411	4,002	3,614	3,290	2,500	2,002	1,722	1,335	1,498
--------------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Table A-8. Passenger Car Occupant Fatalities by Size of Car, 1975-1983 in Multiple Vehicle Fatal Accidents (Unknowns Have Been Distributed in Table*)

Size	1975	1976	1977	1978	1979	1980	1981	1982	1983	Percent Change 1975-83	Percent Change 1982-83
Total	13,498	13,490	14,308	15,289	14,879	13,969	14,106	12,451	12,373	-8.3	-0.6
Percent	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)	(100)		
Small	2,432	2,650	2,949	3,194	3,364	3,337	3,718	3,278	3,336	+37.2	+1.8
Subcompact	(18)	(20)	(21)	(21)	(23)	(24)	(26)	(26)	(27)		
Subcompact	808	957	1,142	1,251	1,389	1,511	1,666	1,574	1,640	+103.0	+4.2
	(6)	(7)	(8)	(8)	(9)	(11)	(12)	(13)	(13)		
Small	549	573	574	633	712	746	964	1,030	1,087	+98.0	+5.5
Compact	(4)	(4)	(4)	(4)	(5)	(5)	(7)	(8)	(9)		
Compact	2,337	2,432	2,572	2,919	2,970	2,933	2,924	2,662	2,506	+7.2	-5.9
	(17)	(18)	(18)	(19)	(20)	(21)	(21)	(22)	(20)		
Intermediate	4,437	4,056	4,173	4,422	4,037	3,571	3,134	2,665	2,607	-41.2	-2.2
	(33)	(30)	(29)	(29)	(27)	(25)	(22)	(21)	(21)		
Full-Size	2,935	2,822	2,898	2,870	2,407	1,871	1,700	1,242	1,197	-59.2	-3.6
	(22)	(21)	(20)	(19)	(16)	(14)	(12)	(10)	(10)		

SOURCE: Fatal Accident Reporting System (FARS), NHTSA.

NOTE: The classification of passenger cars reflects the following groupings by "wheelbase" dimensions:

- Small Subcompact - Less than or equal to 96 inches
- Subcompact - Greater than 96-101 inches inclusive
- Small Compact - Greater than 101-106 inches inclusive
- Compact - Greater than 106-111 inches inclusive
- Intermediate - Greater than 111-120 inches inclusive
- Full-Size - Greater than 120 inches

*The following passenger car occupant fatalities, where the wheelbase was unknown, have been included in the table and distributed in proportion to the fatalities where the size of the car was known.

Unknown Size	4,750	4,072	3,904	3,598	2,690	1,941	1,853	1,469	1,605
--------------	-------	-------	-------	-------	-------	-------	-------	-------	-------

Table A-9. Comparison of Driver Fatalities in Two-Vehicle Accidents Among Vehicles of Different Sizes, 1980-1983 Combined

Size of Smaller Vehicle in the Crash	Size of the Larger Vehicle in the Crash					
	Subcompact	Compact	Intermediate	Full-Size	Light Truck	Heavy Truck
Minicompact	2.2	4.5	9.6	13.9	9.0	36.4
Subcompact		2.07	4.4	6.6	5.7	37.9
Compact			2.0	3.9	3.2	27.8
Intermediate				1.6	1.6	24.6
Full-Size					1.2	25.5
Light Truck						18.6

SOURCE: Fatal Accident Reporting System (FARS), NHTSA.

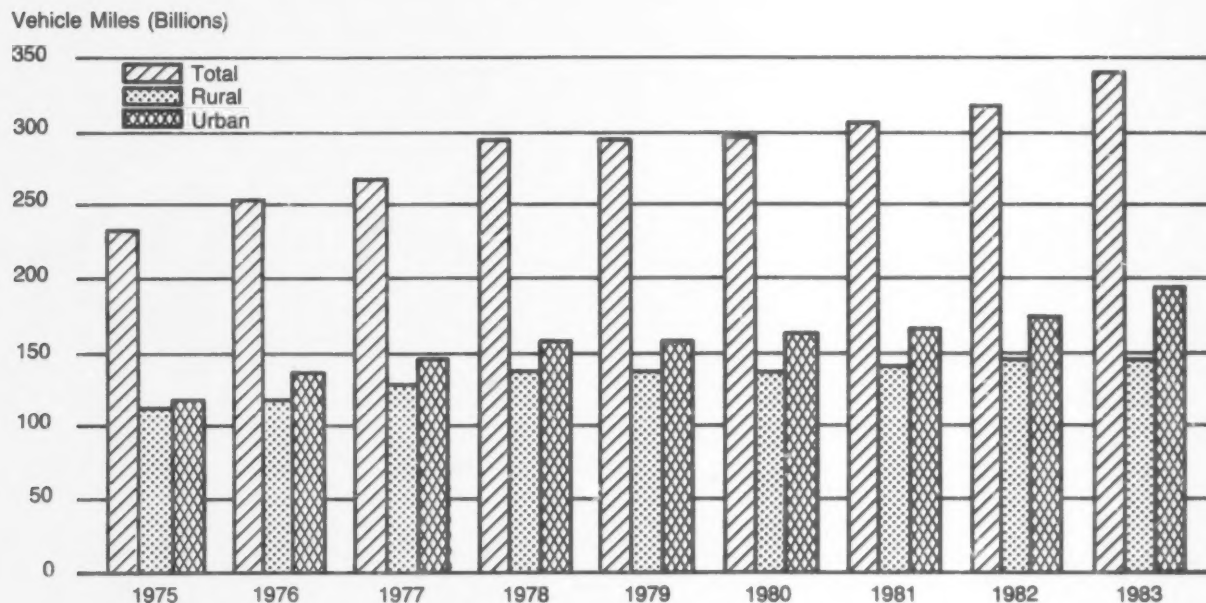
NOTE: This chart illustrates the relative probabilities of fatal injuries to drivers when vehicles of different sizes are involved in accidents. For example, in a collision of a minicompact and a full-size car, the driver of the smaller car is 13.9 times more likely to be killed than the driver of the full-size auto.

Table A-10. Fatality Rates and Vehicle Involvement Rates by Vehicle Type (in Fatal Accidents), 1983

Vehicle Type	Occupant Fatality Rate per 100 Million Vehicle Miles	Occupant Fatality Rate per 10,000 Registered Vehicles	Vehicle Involvement Rate (in Fatal Accidents) per 100 Million Vehicle Miles	Vehicle Involvement Rate (in Fatal Accidents) per 10,000 Registered Vehicles
Passenger Car	1.88	1.81	2.72	2.63
Motorcycle	35.53	7.63	35.84	7.70
Bus	0.79	0.91	4.54	5.23
Truck	1.57	1.75	3.66	4.09
Single Unit Truck	1.66	1.61	3.28	3.18
Combination Truck	1.11	5.92	5.65	30.05
All Vehicle Types (Less Motorcycles)	1.87	1.87	3.10	3.10

SOURCES: Fatalities: Fatal Accident Reporting System (FARS), NHTSA (30-day deaths).
Vehicle Travel and Registered Vehicles: Federal Highway Administration.

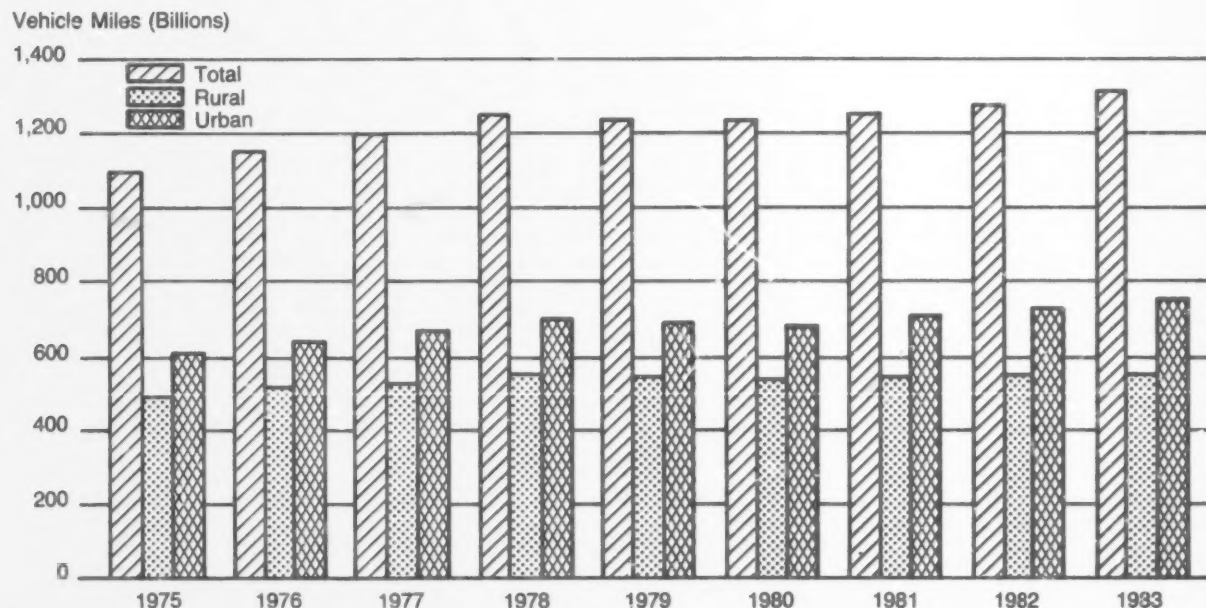
Figure A-11. Motor Vehicle Travel on the Interstate Highway System, 1975-1983



SOURCE: Federal Highway Administration.

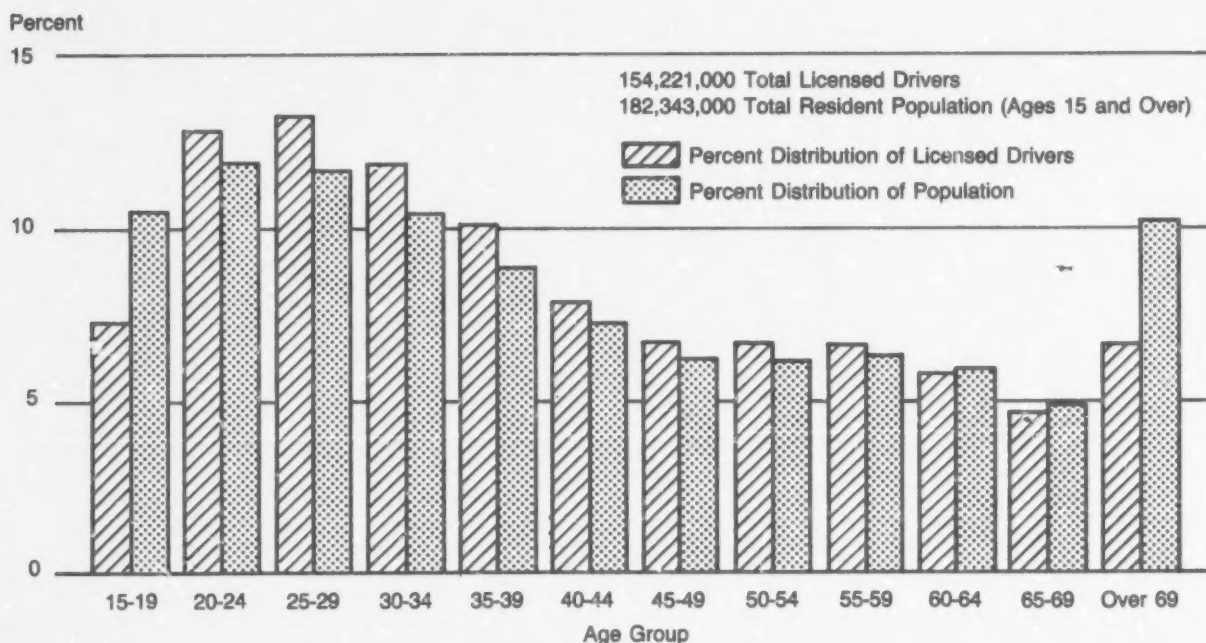
NOTE: Interstate Highway System is synonymous with the Federal Highway Administration categories interstate (Arterial) and Interstate (Final).

Figure A-12. Motor Vehicle Travel on Non-Interstate Highway Systems, 1975-1983



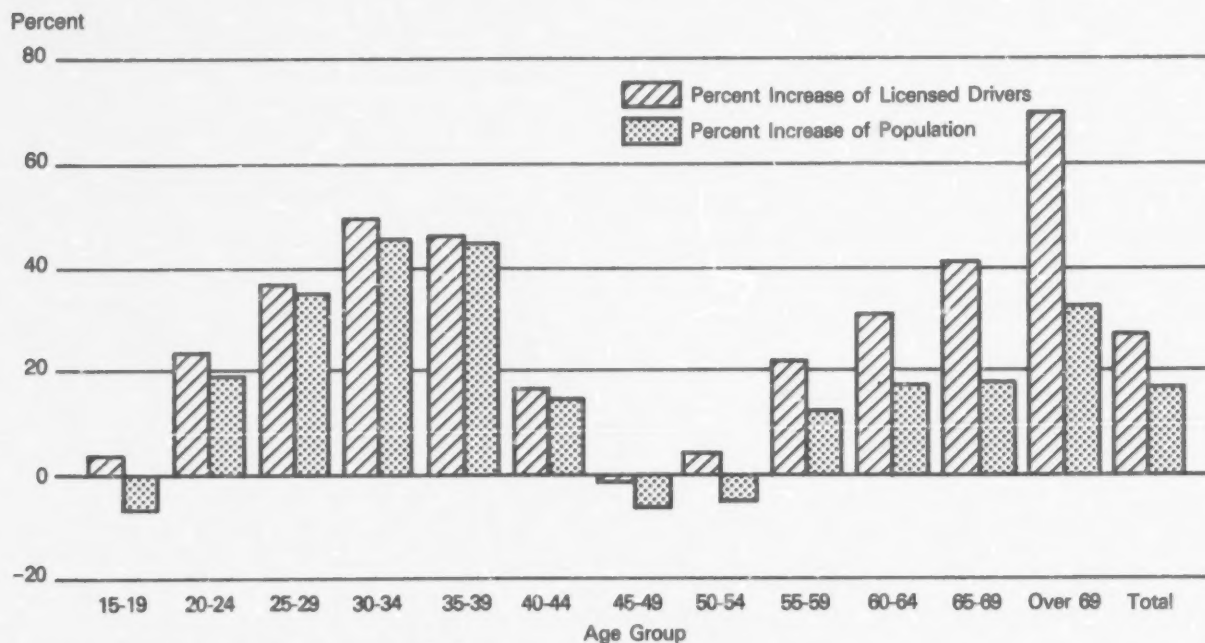
SOURCE: Federal Highway Administration.

Figure A-13. Licensed Drivers and Population by Age Group, 1983



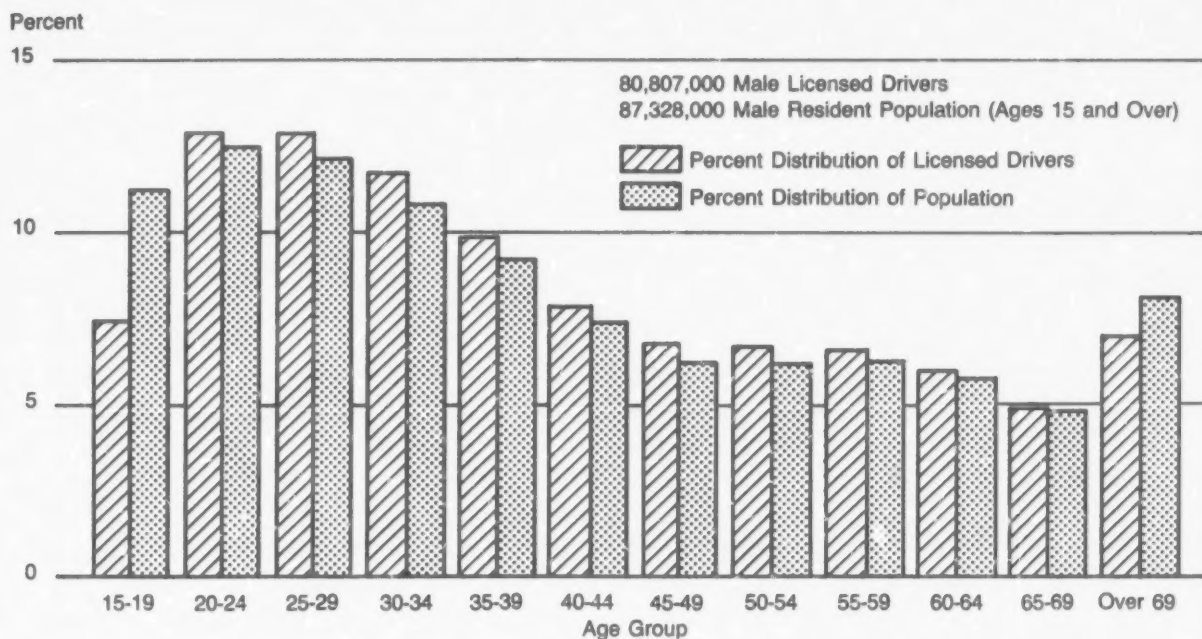
SOURCE: Licensed Drivers — Federal Highway Administration.
Population: Bureau of the Census.

Figure A-14. Percent Increase in Licensed Drivers and Population by Age Group, 1973-1983



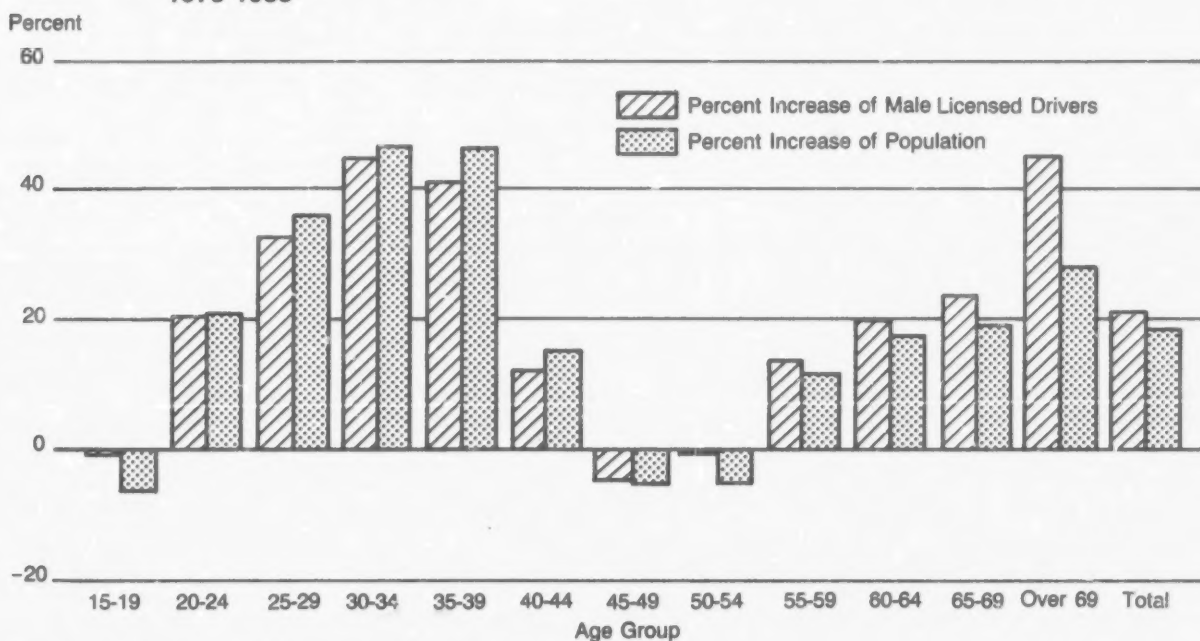
SOURCE: Licensed Drivers — Federal Highway Administration.
Population: Bureau of the Census.

Figure A-15. Distribution of Male Licensed Drivers and Population by Age Group, 1983



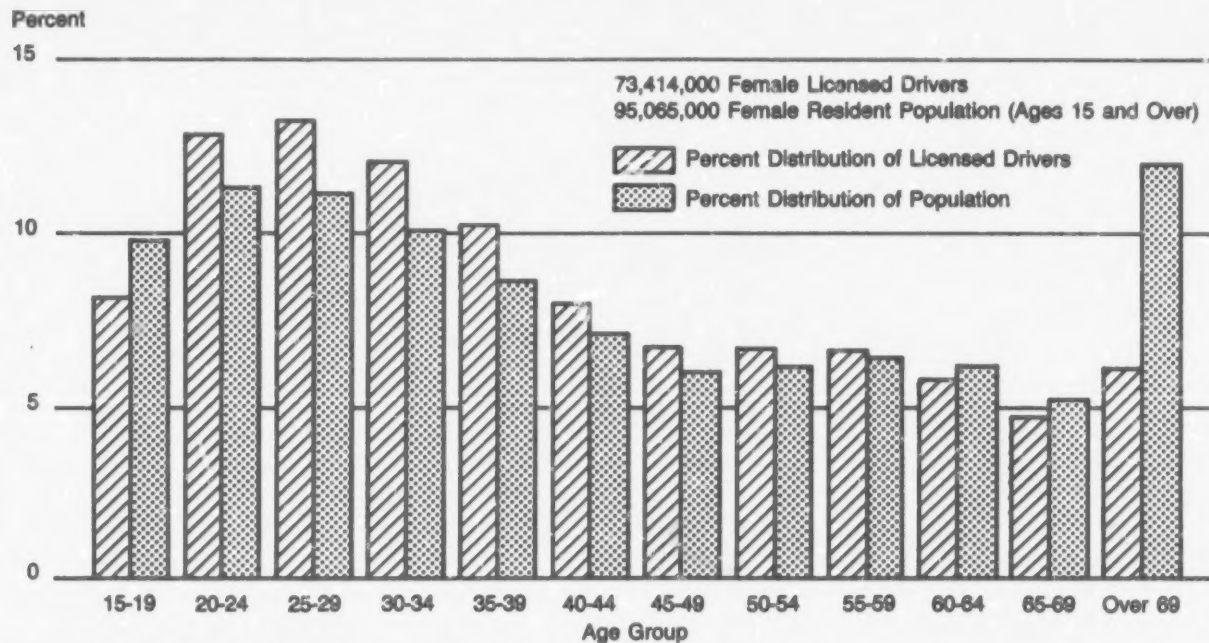
SOURCE: Licensed Drivers — Federal Highway Administration.
Population: Bureau of the Census.

Figure A-16. Percent Increase in Male Licensed Drivers and Population by Age Group, 1973-1983



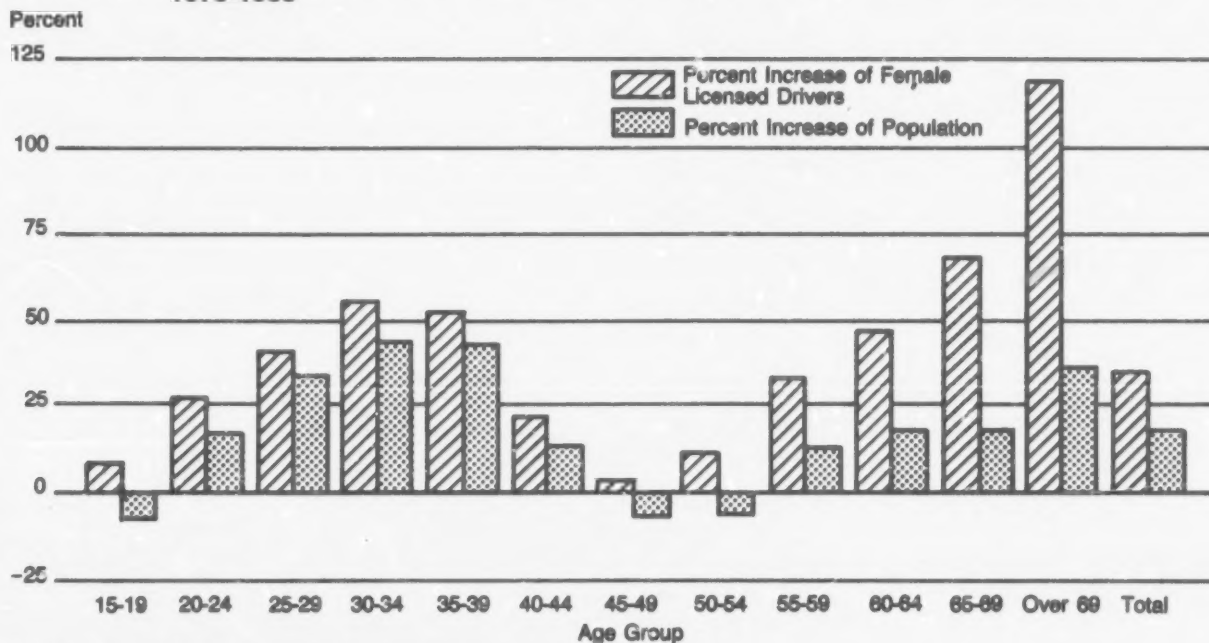
SOURCE: Licensed Drivers — Federal Highway Administration.
Population: Bureau of the Census.

Figure A-17. Distribution of Female Licensed Drivers and Population by Age Group, 1983



SOURCE: Licensed Drivers — Federal Highway Administration.
Population: Bureau of the Census.

Figure A-18. Percent Increase in Female Licensed Drivers and Population by Age Group, 1973-1983



SOURCE: Licensed Drivers — Federal Highway Administration.
Population: Bureau of the Census.

Table A-11. Percent Distribution, by Age, of Drivers Involved in Fatal Accidents, 1983

Type of Accident	Age of Driver						Over 64
	Under 20	20-24	25-34	35-44	45-54	55-64	
Licensed Drivers	7.4	12.9	25.0	17.9	13.3	12.4	11.1
All Fatal Accidents	13.7	19.6	26.5	14.8	9.1	7.1	7.4
Single Vehicle:							
Overturn in Road	19.1	22.7	28.8	14.2	6.9	4.6	3.4
Other Noncollision	16.4	20.9	29.1	14.5	7.4	5.9	3.8
Collision w/Fixed Object	17.8	24.5	26.6	12.5	7.1	5.6	5.4
Multi-Vehicle:							
Rear End	9.4	17.0	27.9	17.4	11.2	8.8	6.8
Head On	12.9	18.2	27.3	15.9	10.7	8.0	6.8
Angle	12.4	17.3	25.2	14.7	9.5	8.1	12.5
Sideswipe	11.1	18.9	25.8	17.3	10.7	8.0	7.1
Pedestrian	10.4	18.1	25.5	14.8	8.8	6.0	4.8
Pedalcyclist	13.2	18.0	23.2	15.3	11.1	8.0	5.4

SOURCE: Fatal Accident Reporting System (FARS), NHTSA.

NOTE: Drivers under 25 are over-involved in all types of accidents, compared to the total number of licensed drivers in that age group. The over-involvement is greatest for single-vehicle accidents. Both male and female drivers in this age group show the same pattern of over-representation. Drivers ages 35 and older are generally in fewer accidents than would be expected on the basis of their numbers.

Table A-12. Percent Distribution, by Age, of Male Drivers Involved in Fatal Accidents, 1983

Type of Accident	Age of Driver						Over 64
	Under 20	20-24	25-34	35-44	45-54	55-64	
Licensed Drivers	7.4	12.9	24.6	17.6	13.3	12.5	11.7
All Fatal Accidents	13.6	20.3	27.7	14.9	9.3	6.9	7.0
Single Vehicle:							
Overturn in Road	17.6	23.1	29.6	14.8	7.1	4.3	3.4
Other Noncollision	15.2	21.0	29.5	14.9	8.2	6.5	3.4
Collision w/Fixed Object	17.7	25.2	27.0	12.2	7.0	5.3	4.7
Multi-Vehicle:							
Rear End	9.2	17.1	29.0	17.4	11.5	8.6	6.8
Head On	12.7	18.1	28.1	15.8	10.9	7.7	6.6
Angle	12.2	18.0	26.1	14.7	9.4	7.6	11.8
Sideswipe	10.9	19.0	26.8	17.0	11.3	8.2	6.7
Pedestrian	10.7	20.0	29.2	16.5	9.9	7.1	5.3
Pedalcyclist	13.2	20.2	25.2	15.1	11.8	8.1	5.3

SOURCE: Fatal Accident Reporting System (FARS), NHTSA.

Table A-13. Percent Distribution, by Age, of Female Drivers Involved in Fatal Accidents, 1983

Type of Accident	Age of Driver						Over 64
	Under 20	20-24	25-34	35-44	45-54	55-64	
Licensed Drivers	7.1	12.9	25.3	18.2	13.4	12.4	10.7
All Fatal Accidents	15.2	18.3	23.8	15.5	9.3	8.4	9.5
Single Vehicle:							
Overturn in Road	26.3	20.6	25.2	11.7	6.3	6.1	3.8
Other Noncollision	22.1	21.4	29.0	13.7	4.6	3.8	5.3
Collision w/Fixed Object	18.9	21.1	22.3	13.8	7.8	7.3	8.8
Multi-Vehicle:							
Rear End	11.1	17.7	24.5	18.2	10.4	10.5	7.6
Head On	13.4	18.3	24.8	16.5	10.0	9.2	7.6
Angle	12.9	15.2	22.4	14.8	9.8	9.7	15.1
Sideswipe	12.8	19.3	22.8	19.3	8.6	7.2	9.3
Pedestrian	15.0	21.3	26.2	16.5	9.4	5.6	5.6
Pedalcyclist	16.4	14.0	21.6	19.9	11.1	9.9	7.0

SOURCE: Fatal Accident Reporting System (FARS), NHTSA.

Table A-14. Traffic Fatalities by Age Group, 1975, 1982, 1983

	1975	1982	1983	Percent Change 1975-83	Percent Change 1982-83
All Ages	44,525	43,945	42,584	-4.4	-3.1
0 - 4	1,313	1,003	980	-25.4	-2.3
5 - 14	3,182	2,179	2,106	-33.8	-3.4
15 - 24	15,465	14,912	13,934	-9.9	-6.6
25 - 34	7,503	9,267	9,155	+22.0	-1.2
35 - 44	4,191	4,848	4,777	+14.0	-1.5
45 - 54	3,939	3,340	3,260	-17.2	-2.4
55 - 64	3,398	3,147	3,105	-8.6	-1.3
65 & Over	5,328	5,005	5,076	-4.7	+1.4
Age Not Stated	208	244	191	-8.2	-21.7

SOURCE: Fatal Accident Reporting System (FARS), NHTSA (30-day traffic deaths).

Table A-15. Number and Distribution of Motor Vehicle Traffic Fatalities by Type, 1963-1983

Year	Total		Bicyclists*		Motorcyclists		Pedestrians*		Others**	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1963	41,723	100.00	580	1.39	940	2.25	7,430	17.81	32,773	78.55
1964	45,645	100.00	690	1.51	1,240	2.72	8,100	17.74	35,615	78.03
1965	47,089	100.00	690	1.47	1,650	3.50	7,990	16.97	36,759	78.06
1966	50,894	100.00	730	1.44	2,230	4.38	8,530	16.76	39,404	77.42
1967	50,724	100.00	750	1.48	2,170	4.28	8,460	16.68	39,344	77.56
1968	52,725	100.00	700	1.33	1,940	3.68	8,800	16.69	41,285	78.30
1969	53,543	100.00	710	1.33	1,870	3.49	8,710	16.27	42,253	78.91
1970	52,627	100.00	760	1.44	2,280	4.33	8,950	17.01	40,637	77.22
1971	52,542	100.00	860	1.64	2,650	5.04	9,100	17.32	39,932	76.00
1972	54,589	100.00	990	1.82	3,030	5.55	9,200	16.85	41,369	75.78
1973	54,052	100.00	1,070	1.98	3,230	5.98	8,930	16.52	40,822	75.52
1974	45,196	100.00	1,040	2.30	3,370	7.46	7,540	16.68	33,246	73.58
1975	44,525	100.00	1,003	2.25	3,189	7.16	7,516	16.88	32,817	73.71
1976	45,523	100.00	914	2.01	3,312	7.28	7,427	16.31	33,870	74.40
1977	47,878	100.00	922	1.93	4,104	8.57	7,732	16.15	35,120	73.35
1978	50,331	100.00	892	1.77	4,577	9.09	7,795	15.49	37,067	73.65
1979	51,093	100.00	932	1.82	4,893	9.58	8,096	15.85	37,172	72.75
1980	51,091	100.00	965	1.89	5,144	10.07	8,070	15.80	36,912	72.25
1981	49,301	100.00	936	1.90	4,906	9.95	7,837	15.90	35,622	72.25
1982	43,945	100.00	883	2.01	4,453	10.13	7,331	16.68	31,278	71.18
1983	42,584	100.00	839	1.97	4,264	10.01	6,824	16.02	30,657	71.99

SOURCES: Deaths: 1962-74, estimated by NHTSA from data supplied by the National Center for Health Statistics, H.H.S., and State Accident Summaries (Adjusted to 30-day deaths).
1975-82 from Fatal Accident Reporting System (FARS), NHTSA.

NOTES: *Motor vehicle involvement only.

**"Others" includes, primarily, drivers and passengers in motor vehicles other than motorcycles and motorscooters. There are a few riders of animals, occupants of animal-drawn vehicles, occupants of street cars, unauthorized riders, etc., also in the category.

Table A-16. Number and Population Death Rate of Motor Vehicle Traffic Fatalities by Type in the Accident, 1963-1983

Year	Resident Pop. (100,000)	Total Deaths		Bicyclists*		Motorcyclists		Pedestrians*		Others**	
		Number	Rate***	Number	Rate***	Number	Rate***	Number	Rate***	Number	Rate***
1963	1884.83	41,723	22.14	580	0.31	940	0.50	7,430	3.94	32,773	17.39
1964	1911.41	45,645	23.88	690	0.36	1,240	0.65	8,100	4.24	35,615	18.63
1965	1935.26	47,089	24.33	690	0.36	1,650	0.85	7,990	4.13	36,759	18.99
1966	1955.76	50,894	26.02	730	0.37	2,230	1.14	8,530	4.36	39,404	20.15
1967	1974.57	50,724	25.69	750	0.38	2,170	1.10	8,460	4.28	39,344	19.93
1968	1993.99	52,725	26.44	700	0.35	1,940	0.97	8,800	4.41	41,285	20.71
1969	2013.85	53,543	26.59	710	0.35	1,870	0.93	8,710	4.33	42,253	20.98
1970	2039.84	52,627	25.80	760	0.37	2,280	1.12	8,950	4.39	40,637	19.92
1971	2068.27	52,542	25.40	860	0.42	2,650	1.28	9,100	4.40	39,932	19.31
1972	2092.84	54,589	26.08	990	0.47	3,030	1.45	9,200	4.40	41,369	19.77
1973	2113.57	54,052	25.57	1,070	0.51	3,230	1.53	8,930	4.23	40,822	19.31
1974	2133.42	45,196	21.18	1,040	0.49	3,370	1.58	7,540	3.53	33,246	15.58
1975	2154.65	44,525	20.66	1,003	0.47	3,189	1.48	7,516	3.49	32,817	15.23
1976	2175.63	45,523	20.92	914	0.42	3,312	1.52	7,427	3.41	33,870	15.57
1977	2197.60	47,878	21.79	922	0.42	4,104	1.87	7,732	3.52	35,120	15.98
1978	2220.95	50,331	22.66	892	0.40	4,577	2.06	7,795	3.51	37,067	16.69
1979	2245.67	51,093	22.75	932	0.42	4,893	2.18	8,096	3.61	37,172	16.55
1980	2272.36	51,091	22.49	965	0.42	5,144	2.26	8,070	3.55	36,912	16.25
1981	2295.18	49,301	21.50	936	0.41	4,906	2.14	7,837	3.42	35,622	15.53
1982	2317.84	43,945	18.98	883	0.38	4,453	1.92	7,331	3.17	31,278	13.51
1983	2339.81	42,584	18.20	839	0.36	4,264	1.82	6,824	2.92	30,657	13.10

SOURCES: Population: U.S. Bureau of the Census (July 1 estimate).

Deaths: 1963-74, estimated by NHTSA from data supplied by the National Center for Health Statistics, H.H.S., and State Accident Summaries (Adjusted to 30-day deaths).

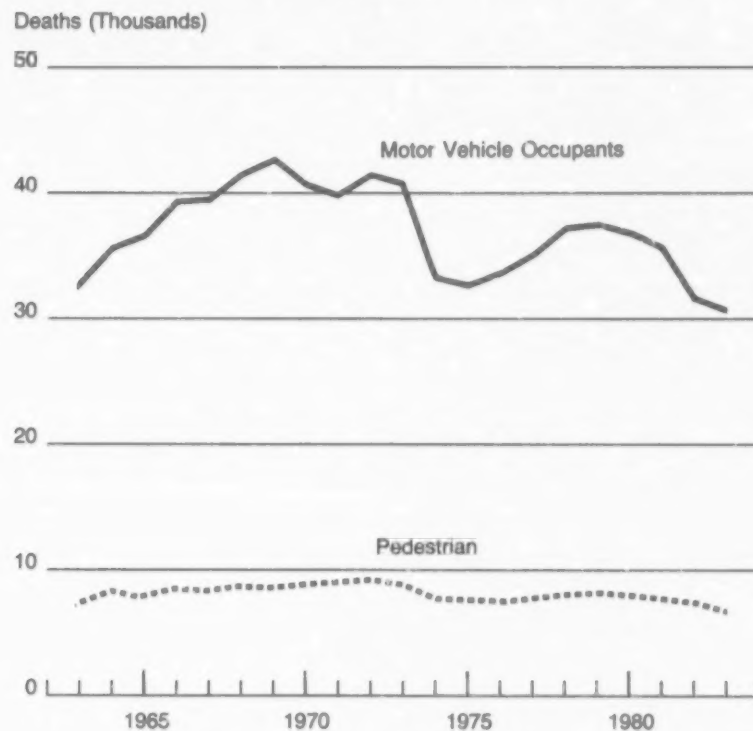
1975-83 from Fatal Accident Reporting System (FARS), NHTSA.

NOTES: *Motor vehicle involvement only.

**"Others" includes, primarily, drivers and passengers in motor vehicles other than motorcycles and motorscooters. There are a few riders of animals, occupants of animal-drawn vehicles, occupants of street cars, unauthorized riders, etc., also in the category.

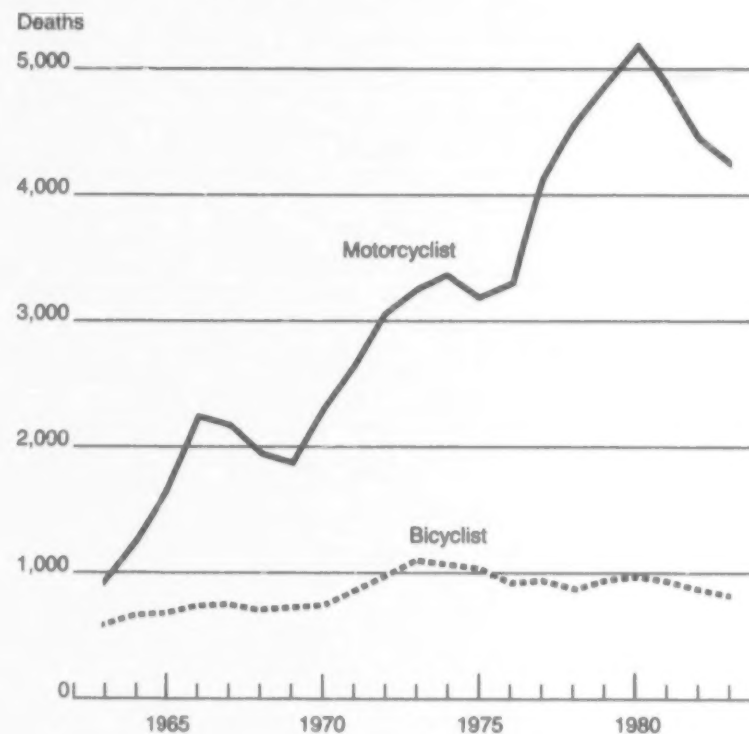
***Deaths per 100,000 resident population.

Figure A-19. Pedestrian and Motor Vehicle Occupant Fatalities, 1963-1983



SOURCES: 1962-74, Estimated by NHTSA from data supplied by National Center for Health Statistics, HHS, and State Accident Summaries (adjusted to 30-day deaths).
1975-83 Fatal Accident Reporting System (FARS), NHTSA.

Figure A-20. Motorcycle and Bicycle Fatalities, 1963-1983



SOURCES: 1962-74, Estimated by NHTSA from data supplied by National Center for Health Statistics, HHS, and State Accident Summaries (adjusted to 30 day deaths).
1975-83 Fatal Accident Reporting System (FARS), NHTSA.

Table A-17. Leading Causes of Death by Age and Sex, United States, 1981

Age Group	Cause of Death	Total			Male			Female		
		Rank	Deaths	%	Rank	Deaths	%	Rank	Deaths	%
All Ages	Diseases of the Heart	1	755,082	38.1	1	401,395	37.7	1	353,687	38.6
	Malignant Neoplasms (Cancer)	2	422,584	21.3	2	228,186	21.4	2	194,398	21.2
	Cerebrovascular Disease (Stroke)	3	163,671	8.3	3	66,531	6.2	3	97,140	10.6
	Motor Vehicle Accidents	4	51,669	2.6	4	37,746	3.5	8	13,923	1.5
	Pneumonia	5	50,778	2.6	7	25,991	2.4	4	24,787	2.7
	Nontransport Accidents	6	45,918	2.3	5	30,390	2.9	7	15,528	1.7
	Other Chronic Obstructive Pulmonary Diseases	7	38,744	2.0	6	26,567	2.5	10	12,177	1.3
	Diabetes Mellitus	8	34,680	1.8	12	14,233	1.3	5	20,447	2.2
	Atherosclerosis	11	28,012	1.4	14	10,976	1.0	6	17,036	1.9
	Certain Conditions Originating in the Perinatal Period	1	21,556	49.0	1	12,255	49.1	1	9,301	48.7
	Congenital Anomalies	2	8,964	20.4	2	4,803	19.3	2	4,161	21.8
Under 1	Symptoms, Signs and Ill-Defined Conditions	3	6,018	13.7	3	3,599	14.4	3	2,419	12.7
	Diseases of the Heart	4	910	2.1	4	494	2.0	4	416	2.2
	Nontransport Accidents	5	820	1.9	5	482	1.9	6	338	1.8
	Pneumonia	6	813	1.8	6	473	1.9	5	340	1.8
	Motor Vehicle Accidents	13	270	0.6	12	160	0.6	14	110	0.6
1-4	Nontransport Accidents	1	2,085	25.8	1	1,326	28.7	1	759	21.9
	Motor Vehicle Accidents	2	1,042	12.9	2	577	12.5	3	465	13.4
	Congenital Anomalies	3	1,040	12.8	3	534	11.5	2	506	14.6
	Malignant Neoplasms (Cancer)	4	661	8.2	4	372	8.0	4	289	8.3
	Other Diseases of Nervous System and Sense Organs	5	472	5.8	5	263	5.7	5	209	3.0
	Homicide and Legal Intervention	6	342	4.2	6	184	4.0	7	158	4.6
	Diseases of the Heart	7	339	4.2	7	174	3.8	6	165	4.6
5-9	Motor Vehicle Accidents	1	1,188	25.2	1	771	27.1	1	417	22.3
	Nontransport Accidents	2	1,003	21.3	2	666	23.4	2	337	18.1
	Malignant Neoplasms (Cancer)	3	731	15.5	3	421	14.8	3	310	16.6
	Congenital Anomalies	4	296	6.3	4	150	5.3	4	146	7.8
	Other Diseases of Nervous System and Other Sense Organs	5	246	5.2	5	128	4.5	5	118	6.3
	Homicide and Legal Intervention	6	156	3.3	6	88	3.1	7	68	3.6
	Diseases of the Heart	7	147	3.1	7	78	2.7	6	69	3.7
10-14	Motor Vehicle Accidents	1	1,393	25.6	1	936	27.0	1	457	23.0
	Nontransport Accidents	2	1,116	20.5	2	868	25.1	3	248	12.5
	Malignant Neoplasms (Cancer)	3	687	12.6	3	392	11.3	2	295	14.9
	Homicide and Legal Intervention	4	285	5.2	4	160	4.6	5	125	6.3
	Congenital Anomalies	5	266	4.9	5	139	4.0	4	127	6.4
	Other Diseases of Nervous System and Sense Organs	6	245	4.5	6	130	3.8	6	115	5.8
15-19	Motor Vehicle Accidents	1	7,970	42.9	1	5,820	43.0	1	2,150	42.6
	Nontransport Accidents	2	2,336	12.6	2	1,998	14.8	5	338	6.7
	Homicide and Legal Intervention	3	2,078	11.2	3	1,617	12.0	2	461	9.1
	Suicide	4	1,770	9.5	4	1,413	10.4	4	357	7.1
	Malignant Neoplasms (Cancer)	5	1,061	5.7	5	635	4.7	3	426	8.4
	Other Diseases of Nervous System and Sense Organs	6	397	2.1	6	280	2.1	8	117	2.3
	Diseases of the Heart	7	388	2.1	8	235	1.7	6	153	3.0
20-24	Motor Vehicle Accidents	1	9,467	35.3	1	7,480	36.7	1	1,987	31.0
	Homicide and Legal Intervention	2	4,120	15.4	2	3,292	16.1	2	828	12.9
	Suicide	3	3,400	12.7	3	2,797	13.7	3	603	9.4
	Nontransport Accidents	4	3,186	11.9	4	2,735	13.4	5	451	7.0
	Malignant Neoplasms (Cancer)	5	1,347	5.0	5	824	4.0	4	523	8.2
	Diseases of the Heart	6	698	2.6	6	443	2.2	6	255	4.0
25-29	Motor Vehicle Accidents	1	6,548	25.2	1	5,206	27.2	1	1,342	19.7
	Homicide and Legal Intervention	2	3,979	15.3	2	3,274	17.1	4	705	10.4
	Suicide	3	3,445	13.3	3	2,686	14.0	3	759	11.1
	Nontransport Accidents	4	2,972	11.4	4	2,483	13.0	5	489	7.2
	Malignant Neoplasms (Cancer)	5	1,969	7.6	5	1,062	5.5	2	907	13.3
	Diseases of the Heart	6	1,157	4.5	6	757	4.0	6	400	5.9

Table A-17. Leading Causes of Death by Age and Sex, United States, 1981 (Continued)

Age Group	Cause of Death	Total			Male			Female		
		Rank	Deaths	%	Rank	Deaths	%	Rank	Deaths	%
30-34	Motor Vehicle Accidents	1	4,626	18.1	1	3,619	20.3	2	1,007	13.0
	Homicide and Legal Intervention	2	3,226	12.6	2	2,634	14.8	5	592	7.6
	Malignant Neoplasms (Cancer)	3	3,115	12.2	6	1,395	7.8	1	1,720	22.2
	Suicide	4	2,916	11.4	3	2,236	12.6	3	680	8.8
	Nontransport Accidents	5	2,515	9.8	4	2,070	11.6	6	445	5.7
	Diseases of the Heart	6	2,116	8.3	5	1,466	8.2	4	650	8.4
35-39	Malignant Neoplasms (Cancer)	1	4,695	18.0	3	2,031	11.9	1	2,664	29.9
	Diseases of the Heart	2	3,967	15.2	1	2,971	17.3	2	996	11.2
	Motor Vehicle Accidents	3	3,045	11.7	2	2,320	13.5	3	725	8.1
	Suicide	4	2,283	8.8	5	1,661	9.7	4	622	7.0
	Homicide and Legal Intervention	5	2,191	8.4	4	1,802	10.5	8	389	4.4
	Nontransport Accidents	6	1,841	7.1	6	1,448	8.4	7	393	4.4
	Chronic Liver Disease and Cirrhosis	7	1,359	5.2	7	910	5.3	6	449	5.0
	Cerebrovascular Disease (Stroke)	8	920	3.5	8	464	2.7	5	456	5.1
40-44	Malignant Neoplasms (Cancer)	1	7,833	23.9	2	3,575	17.1	1	4,258	36.2
	Diseases of the Heart	2	7,503	22.9	1	5,706	27.2	2	1,797	15.3
	Motor Vehicle Accidents	3	2,318	7.1	3	1,730	8.3	4	588	5.0
	Suicide	4	1,932	5.9	4	1,351	6.4	5	581	4.9
	Chronic Liver Disease and Cirrhosis	5	1,876	5.7	7	1,303	6.2	6	573	4.9
	Nontransport Accidents	6	1,693	5.2	6	1,304	6.2	7	389	3.3
	Homicide and Legal Intervention	7	1,639	5.0	5	1,331	6.4	8	308	2.6
	Cerebrovascular Disease (Stroke)	8	1,323	4.0	8	657	3.1	3	666	5.7
45-54	Malignant Neoplasms (Cancer)	1	40,203	31.0	2	20,429	24.9	1	19,774	41.7
	Diseases of the Heart	2	40,183	31.0	1	30,363	37.0	2	9,820	20.7
	Chronic Liver Disease and Cirrhosis	3	6,401	4.9	3	4,259	5.2	4	2,142	4.5
	Cerebrovascular Disease (Stroke)	4	5,613	4.3	6	2,899	3.5	3	2,714	5.7
	Motor Vehicle Accidents	5	4,053	3.1	5	2,943	3.6	6	1,110	2.3
	Nontransport Accidents	6	3,972	3.1	4	2,956	3.6	7	1,016	2.1
	Suicide	7	3,633	2.8	7	2,458	3.0	5	1,175	2.5
55-64	Diseases of the Heart	1	105,886	36.4	1	74,585	40.9	2	31,301	28.9
	Malignant Neoplasms (Cancer)	2	95,494	32.9	2	53,172	29.2	1	42,322	39.1
	Cerebrovascular Disease (Stroke)	3	13,831	4.8	3	7,357	4.0	3	6,474	6.0
	Chronic Liver Disease and Cirrhosis	4	8,643	3.0	4	5,682	3.1	4	2,961	2.7
	Other Chronic Obstructive Pulmonary Diseases	5	6,018	2.1	5	3,927	2.2	6	2,091	1.9
	Diabetes Mellitus	6	5,632	1.9	7	2,714	1.5	5	2,918	2.7
	Nontransport Accidents	7	4,727	1.6	6	3,406	1.9	8	1,321	1.2
	Motor Vehicle Accidents	9	3,821	1.3	8	2,574	1.4	9	1,247	1.2
65+	Diseases of the Heart	1	591,606	44.0	1	284,018	43.2	1	307,588	44.8
	Malignant Neoplasms (Cancer)	2	264,644	19.7	2	143,792	21.9	2	120,852	17.6
	Cerebrovascular Disease (Stroke)	3	140,307	10.4	3	54,291	8.3	3	86,016	12.5
	Pneumonia	4	42,355	3.2	5	20,658	3.1	4	21,697	3.2
	Other Chronic Obstructive Pulmonary Diseases	5	31,212	2.3	4	21,746	3.3	7	9,466	1.4
	Atherosclerosis	6	26,726	2.0	6	10,154	1.5	5	16,572	2.4
	Diabetes Mellitus	7	25,204	1.9	7	9,418	1.4	6	15,786	2.3
	Motor Vehicle Accidents	20	5,928	0.4	17	3,610	0.5	25	2,318	0.3

Appendix B
Funding Tables

Table B-1. Summary of Authorizations and Appropriations, Fiscal Years 1974-1984
(Millions of Dollars)

	FY74	FY75	FY76	FY77	FY78	FY79	FY80	FY81	FY82	FY83	FY84
Operations and Research Appropriation:											
Traffic and Motor Vehicle Safety Programs:											
Authorization	30.5 ¹	55.0	60.0	60.0	60.0	43.6 ¹	45.2 ¹	49.4 ¹	43.4 ¹	51.4	55.0
Appropriation	30.5	35.1	38.0	41.8	42.4	43.6	45.2	49.4	43.4	48.1	52.0
Automotive Fuel Economy and Consumer Information:											
Authorization	37.0	48.0	7.5	13.9	16.7	12.4 ¹	12.4 ¹	9.5 ¹	7.7 ¹	4.2	4.2
Appropriation	15.0	7.7	1.0	7.4	10.2	12.4	12.4	9.5	7.7	4.2	4.1
Highway Safety Research and Development Programs:											
Authorization	42.5	55.0	65.0	40.0	50.0	50.0	50.0	50.0	31.0	31.0	31.0
Appropriation	39.4	28.1	29.0	27.1	26.8	26.1	26.1	27.0	23.8	21.7	21.9
Total Operations and Research Appropriation											
Authorization	110.0	158.0	132.5	113.9	126.7	106.0	107.6	108.9	82.1	86.6	90.2
Appropriation	84.9 ²	70.9	68.0	76.3	79.4	82.1	83.7	85.9	74.9	74.0	78.0
Highway Traffic Safety Grant Program:											
Safety Formula Grants/ School Bus Driver Training											
Authorization	100.0	125.0	150.0	122.0	137.0	177.5	177.5	202.5	102.5	101.5	100.0
Obligation Limitation/ Appropriation	66.5	73.0	87.7	114.0	157.0 ³	172.0	177.5	163.0 ⁴	97.5	96.5	100.0
Safety Belt and Accident Reduction Incentives											
Authorization	37.5	48.0	56.5	15.0	15.0						
Obligation Limitation	.3	13.1	13.2	15.0	15.0						
National 55 MPH Speed Limit (Including Incentives)											
Authorization						50.0	67.5	67.5	5	5	5
Appropriation							20.0	25.0			
Innovative Grants											
Authorization							5.0	10.0			
Appropriation								1.0			
Alcohol Incentive Grants											
Authorization										25.0	50.0
Appropriation										5.0 ⁶	37.9
Highway Safety Education and Information											
Authorization										16.0	
Obligation Limitation										1.0 ⁵	5.0 ⁷
Total NHTSA											
Authorization	137.5	173.0	206.5	137.0	152.0	227.5	250.0	280.0	102.5	142.5	150.0
Appropriation/Obligation Limitation	66.8	86.1	100.9	129.0	172.0	172.5	197.5	189.0	97.5	102.5	142.9
FHWA (Safety Formula Grants)											
Authorization	25.0	30.0	35.0	25.0	25.0	25.0	25.0	25.0	10.0	.3	10.0
Obligation Limitation	13.2	14.7	19.1	21.0	28.0 ³	28.0 ³	28.0 ³	28.0 ³	10.0	10.0 ³	10.0
Total Highway Traffic Safety Grant Program											
Authorization	162.5	203.0	241.5	162.0	177.0	252.5	275.0	305.0	112.5	142.8	160.0
Appropriation/Obligation Limitation	30.0	100.8	120.0	150.0	200.0	200.0	225.5	217.0	107.5	112.5	152.9

¹Authorization obtained from the Appropriation Act during these years.

²Includes \$9 million transferred from the 1972 Appropriation for the Compliance Test Facility.

³Part of this obligation level financed from prior year carryover authorizations.

⁴Includes \$10 million appropriated for the Transportation Systems Management program.

⁵Twenty percent of the authorization for Section 402 grants must be obligated for enforcement of the National Maximum Speed Limit.

⁶Estimated obligations — programs not addressed by the Appropriations Committee in 1983.

⁷Cumulative limitation for 1983 and 1984.

Table B-2. History of NHTSA Personnel Strengths (Full-time Permanent Positions) Fiscal Years 1974-1984

	FY 1974			FY 1975			FY 1976			FY 1977			FY 1978			FY 1979			FY 1980			FY 1981			FY 1982			FY 1983			FY 1984		
	President's Budget Appropriated	Actual	Year End	President's Budget Appropriated	Actual	Year End	President's Budget Appropriated	Actual	Year End	President's Budget Appropriated	Actual	Year End	President's Budget Appropriated	Actual	Year End	President's Budget Appropriated	Actual	Year End	President's Budget Appropriated	Actual	Year End	President's Budget Appropriated	Actual	Year End	President's Budget Appropriated	Actual	Year End	President's Budget Appropriated	Actual	Year End	President's Budget Appropriated	Actual	Year End
Program Direction & Coordination	94	94	80	93	93	88	97	97	95	97	104	99	107	104	99	109	109	107	109	109	103	105	105	99	98	98	88	98	98	84			
Office of the Administrator																															41	68	65
Motor Vehicle Programs	225	225	148	225	225	155	197	197	157	202	202	163	196	183	144																		
Rulemaking Programs																55	55	52	58	58	57	49	49	49	47	53	49	53	53	44	42	48	45
Enforcement Programs																88	88	83	92	92	77	90	90	82	84	81	71	81	81	68	81	83	80
Highway Safety Programs	119	109	122	124	124	134	134	134	131	134	136	131	131	131	126	129	129	121	129	129	113	115	115	106	80	82	77	82	82	72	79	82	80
Research and Analysis	178	178	149	166	166	150	183	183	165	180	185	169	183	183	173	195	195	184	188	188	171	172	172	162	152	150	128	150	150	125	133	136	127
Staff and Administrative Support	119	119	112	124	124	119	124	124	117	124	126	117	125	125	113	122	122	114	122	122	112	111	111	98	102	102	91	102	102	83			
General Administration																															138	116	109
Automotive Fuel Economy & Con- sumer Information	40	40	36	38	33	21	30	30	38	25	51	21	61	61	40	61	61	58	61	61	61	50	50	44	43	37	33	37	37	23	23	23	23
Subtotal	765	765	647	765	765	667	765	765	700	762	802	705	803	787	895	759	759	719	759	759	696	692	692	640	606	603	537	603	603	499	537	596	528
Regional Offices	116	116	114	116	118	117	116	116	113	116	116	113	115	115	110	115	115	109	115	115	111	105	105	103	80	83	82	83	83	80	80	84	80
Grand Total	881	881	761	881	881	784	881	881	813	878	918	818	918	902	805	874	874	828	874	874	805	797	797	743	686	686	619	686	686 ¹	579	617	640	608

¹Internal allocation set at 617 positions.

Appendix C
Research Notes

1983 RESEARCH NOTES

<u>TITLE</u>	<u>AUTHOR</u>	<u>DATE</u>
The Trucking Industry in the United States A Preliminary Characterization	Leasure	1983
A Retrospective Analysis of the General Motors Air Cushion Restraint System Marketing Effort, 1974 to 1976	Gauthier	Oct. 1983
Development of Anthropometrically Based Design Specifications for an Advanced Adult Anthropomorphic Dummy Family	Haffner	Nov. 1983
Location of Hood Edge Affects Pedestrian Injuries	Hofferberth	Nov. 1983
Air Brake Adjustment is Critical	Radlinski	Nov. 1983
The Accuracy of Skid Marks for Predicting Pre-Crash Speed	Garrott	Nov. 1983
National Center for Statistics and Analysis Analytical Studies: Oct. 1982 - March 1983		May 1983
Early Assessment of 1982 Traffic Fatalities	Cerrelli	May 1983
Infants and Toddlers in Passenger Car Crashes	Partyka	May 1983
Simple Models of Fatality Trends Using Employment and Population Data	Partyka	Sept. 1983
Comparison by Age of Drivers in Two-Car Fatal Crashes	Partyka	Sept. 1983
Accident Rates for Passenger Cars Passively Involved in Rear-End Collisions	Richardson	Aug. 1983
State Injury Estimates Based Upon a Synthesis of National Accident Data	Partyka	Oct. 1983
Development of Industry-Based Strategies for Motivating Seat-Belt Use	Bigelow	April 1983
Corporate Incentives for Promoting Safety Belt Use: Rationale, Guidelines, and Examples	Bigelow	April 1983
Guidelines for Conducting a Survey of the Use of Safety Belts and Child Safety Seats	Ziegler	May 1983
Identification of Motivations for Unsafe Driving Actions and Potential Countermeasures	Vegega	May 1983

RESEARCH NOTES 1983-Continued

<u>TITLE</u>	<u>AUTHOR</u>	<u>DATE</u>
Reducing Alcohol-Impaired Driving: Survey for Use in Measuring Program Effectiveness	Vegega	May 1983
Demographic, Situational and Motivational Factors Affecting Safety Belt Use	Bigelow	June 1983
Manual for Assessing the Safety Relevance of Pedestrian and Bicyclist Programs	Levy	July 1983
Analysis for Drugs in Saliva and Breath	Frank	July 1983
Norms and Attitudes Related to Alcohol Usage	Vegega	July 1983
Non-Use of Motor Vehicle Safety Belts as an Issue in Civil Litigation	Hawley	July 1983
A Simulator Study of the Combined Effects of Alcohol and Marihuana on Driving Behavior	Schweitz	Aug. 1983
Identification of DWI Behavior Patterns and Methods for Change	Schweitz	Aug. 1983
Protecting Drivers of Disabled Vehicles	Levy	Aug. 1983
Impact of Travel Patterns and Driving Behavior on Crash Involvement	—	Aug. 1983
19-City Safety Belt and Child Safety Seat Use Observation Survey	—	Aug. 1983
Older Driver Retraining	Smith	Sept. 1983
Crash Risk of Licensed Driver Hospitalized for Heart Disease Related to Coronary Insufficiency	Eberhard/ Sleet	Nov. 1983
Development of Effective Behavioral Test Procedures for Alcohol-Impaired Driver Identification	Anderson	Nov. 1983
Motivation of Restraint Systems Usage Among Specific Target Groups of Drivers and Passengers	Ziegler	Dec. 1983
Young Driver Risk Taking Research	Smith	Dec. 1983

Appendix D

**Publications of the National Highway
Traffic Safety Administration**

Appendix D. Publications of the National Highway Traffic Safety Administration

[This List Comprises National Highway Traffic Safety Administration Publications Issued During 1983. Titles Are Arranged Alphabetically and May Be Obtained from the General Services Division, Room 6117 (NAD-51), 400 7th Street, S.W., Washington, D.C. 20590. Telephone (202) 426-0874]

1. *Acts Administered by NHTSA.*
 - A. Highway Safety Act of 1966; Motor Vehicle Information and Cost Savings Act; National Traffic and Motor Vehicle Safety Act of 1966. June 1983 Revision. HS-806 461.
 - B. Highway Safety Act of 1966. June 1983 Revision. HS-806 462.
 - C. Motor Vehicle Information and Cost Savings Act. June 1983 Revision. HS-806 464.
 - D. National Traffic and Motor Vehicle Safety Act of 1966. June 1983 Revision. HS-806 463.
2. *Assessment of the 1982 Traffic Fatality Decrease.* HS-806 490.
3. *Automotive Fuel Economy, Seventh (7th) Annual Report to Congress.* January 1983. HS-806 373.
4. *Digest of State Alcohol-Highway Safety Related Legislation*, 2nd ed. August 1983. HS-806 480.
5. *Driver Improvement System for Traffic Violators.* November 1982. HS-806 284.
6. *Driver Licensing Examiner Certification Program.* HS-806 384.
7. *Early License Revocation for Driving While Under the Influence (DWUI).* 1982. HS-806 307.
8. *The Economic Cost to Society of Motor Vehicle Accidents.* January 1983. HS-806 342.
9. *Fatality Trends.* 1983. HS-806 356. Numbers not assigned to future issues.
10. *A Guide to Audio Visual and Print Materials on Safety Belts.* July 1983. HS-806 418.
11. *Guide to Self-Funding Alcohol Traffic Safety Programs.* 1983. HS-806 432.
12. *Guidelines for Conducting a Survey of the Use of Safety Belts and Child Seats.* HS-806 467.
13. *How to Save Lives and Reduce Injuries — A Citizen Activist Guide to Effectively Fight Drunk Driving.* August 1982. HS-806 250.
14. *Idea Sampler: To Promote Observance of National Drunk and Drugged Driver Awareness Week.* 1983. HS-806 477.
15. *Infants and Toddlers in Passenger Car Crashes.* May 1983. HS-806 469.
16. *An Interim Report to The National from the Presidential Commission on Drunk Driving.* HS-806 343.
17. *National Safety Belt Usage Program: Progress and Assessment Report.* October 1983. HS-806 478.
18. *1982 Traffic Fatalities; Early Assessment.* April 1983. HS-806 421.
19. *Ninth (9th) International Technical Conference on Experimental Safety Vehicles.* November 1982. HS-806 341. (Microfiche; "REFERENCE COPY ONLY").*
20. *Planning for Safety Priorities: 1983 Safety Priority Plan.* April 1983. HS-806 399.
21. *Preliminary Regulatory Impact Analysis: Possible Modifications to part 581 — Bumper Standard.* HS-806 482U. (Microfiche; "REFERENCE COPY ONLY").*
22. *Presentation on Driver License Suspension/Revocations Prior to Court.* November 1982. HS-806 306.
23. *Profit in Safety Belts: A Handbook for Employers.* HS-806 493.
24. *Profit in Safety Belts: An Introduction to Employers Programs.* HS-806 492.

*These documents may be viewed in the Technical Reference Division, NAD-52, Room 5108, 400 7th Street, S.W., Washington, D.C. 20590.

Appendix D. Publications of the National Highway Traffic Safety Administration (Continued)

25. Program Management Materials. January 1983.**

A. Manual Accident Typing (MAT) for Pedestrian Accidents

- | | |
|--|------------|
| 1. Administrator's Guide MAT/CAT (one/set) | HS-806 350 |
| 2. Training Manual | HS-806 352 |
| 3. Practice Cases Booklet MAT/CAT | HS-806 353 |
| 4. Coder's Handbook | HS-806 354 |

B. Computer Accident Typing (CAT) for Pedestrian Accidents

- | | |
|--|------------|
| 1. Administrator's Guide MAT/CAT (one/set) | HS-806 350 |
| 2. Training Manual | HS-806 351 |
| 3. Practice Cases Booklet MAT/CAT | HS-806 353 |
| 4. Coder's Handbook | HS-806 355 |

C. Manual Accident Typing (MAT) for Bicycle Accidents

- | | |
|--|------------|
| 1. Administrator's Guide MAT/CAT (one/set) | HS-806 344 |
| 2. Training Manual | HS-806 346 |
| 3. Practice Cases Booklet MAT/CAT | HS-806 347 |
| 4. Coder's Handbook | HS-806 349 |

D. Computer Accident Typing (CAT) for Bicycle Accidents

- | | |
|--|------------|
| 1. Administrator's Guide MAT/CAT (one/set) | HS-806 344 |
| 2. Training Manual | HS-806 345 |
| 3. Practice Cases Booklet MAT/CAT | HS-806 347 |
| 4. Coder's Manual | HS-806 348 |

26. Safety Related Recall Campaigns for Motor Vehicles and Motor Vehicle Equipment, Including Tires.

- | | |
|---|------------|
| A. Jan. - Dec. 1981, Annual Cumulation for 1981 | HS-806 340 |
| B. Jan. - Dec. 1982, Annual Cumulation for 1982 | HS-806 435 |
| C. Jan. - Dec. 1983, Annual Cumulation for 1983 | HS-806 539 |

27. Simple Models of Fatality Trends Using Employment and Population Data. 1983. HS-806 491.

28. State Alcohol Countermeasures, 1982-1983: Funding, Programs, Legislation. March 1983. HS-806 431.

29. Task Force Implementation Guidelines for the Development of State and Community Alcohol Highway Safety Programs. 1983. HS-806 433.

30. Tracking Alcohol Involvement Problems in U.S. Highway Crashes. October 1983. HS-806 489.

31. Traffic Laws Annotated, 1981 Annual Supplement. 1983. HS-806 427.

32. Traffic Safety Trends and Firecasts. October 1983. HS-806 479.

33. Utilization of Occupant Protection Funds in State Programs. February 1983. HS-806 488.

34. Who's Going to Call the First Meeting? Action Guide for Local Drunk Driving Programs. March 1983. HS-806 385. (Microfiche; "REFERENCE COPY ONLY").*

*These documents may be viewed in the Technical Reference Division, NAD-52, Room 5108, 400 7th Street, S.W., Washington, D.C. 20590.

**The documents listed above may be obtained by contacting: Dr. LeRoy Dunn, National Highway Traffic Safety Administration, NTS-01, 400 7th Street, S.W. Washington, D.C. 20590.

Appendix E

**Major Research Projects Performed for NHTSA
under Contracts That Utilized FY 1983 Funds**

APPENDIX E
MAJOR RESEARCH PROJECTS PERFORMED FOR
NHTSA UNDER CONTRACTS WHICH UTILIZED FY 1983 FUNDS

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
ADP-80-366	WILSON HILL	TIMESHARING SUPPORT	01/17/80	09/30/80	87000	0	0	0
ADP-82-512	MCDONNELL DOUGLAS (MCAUTO)	TIMESHARING SUPPORT	11/19/81	09/30/81	0	0	30000	0
ADP-82-512	ADP NETWORK SERVICES, INC.	TIMESHARING SUPPORT	10/16/81	09/30/82	0	0	152200	0
ADP-82-513	INFORMATICS, INC	TIMESHARING SUPPORT	11/19/81	09/30/82	0	343009	2324253	0
ADP-82-517	GENERAL ELECTRIC	TIME SHARING (GE)	11/27/81	09/30/82	0	0	45000	0
ADP-82-518	INFORMATICS	PROCURE COMPUTER TIME	03/30/82	09/30/82	0	0	26000	0
ADP-82-531	NATIONAL INSTITUTE OF HEALTH	TIMESHARING SUPPORT	11/19/81	09/30/82	0	0	129675	0
ADP-83-636	INFORMATICS, INC	TIMESHARING CONTRACT FOR THE NATIONAL CENTER FOR STATISTICS AND ANALYSIS	10/31/82	09/30/83	0	0	0	1815000
ADP-83-638	NATIONAL INSTITUTE OF HEALTH	TIMESHARING FOR THE NATIONAL CENTER FOR STATISTICS AND ANALYSIS	10/31/82	09/30/83	0	0	0	259288
ADP-83-639	MCAUTO	DATA PROCESSING AND SOFTWARE SUPPORT	01/17/83	09/30/83	0	0	0	40000
ADP-83-640	MCDONNELL DOUGLAS AUTOMATION COMPANY	ADP SUPPORT (MCAUTO)	01/17/83	09/30/83	0	0	0	30000
ADP-83-643	GENERAL ELECTRIC	GE TIMESHARING FOR NRD-10	01/17/83	09/30/83	0	0	0	45000
ADP-83-675	U.S. DOT - WORKING CAPITAL FUND	PAYMENT OF NHTSA ADMINISTRATIVE CHARGES FOR WORKING CAPITAL FUND - TIMESHARING	08/12/83	09/30/83	0	0	0	120000

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DOT HS-5-01160	UNIVERSITY OF SOUTHERN CALIFORNIA	MOTORCYCLE FATAL ACCIDENT STUDY	08/31/75	12/31/82	0	0	50000	0
DOT HS-5-01179	CALSPAN FIELD SERVICES	STUDY OF DRIVER BEHAVIOR ERRORS IN ALCOHOL/DRUGS	08/01/75	03/31/82	166303	79005	0	0
DOT HS-6-01286	UNIVERSITY OF MICHIGAN	FLEET ACCIDENT EVALUATION OF FMVSS121	09/30/80	12/31/81	43415	0	0	0
DOT HS-6-01331	WRIGHT PATERSON AF BASE	CRASH VICTIM SIMULATOR DATA	03/01/76	12/31/80	31733	0	0	0
DOT HS-6-01389	UNIVERSITY OF MICHIGAN	NATIONAL CRASH SEVERITY STUDY	05/15/76	04/30/81	30000	0	0	0
DOT HS-6-01393	UNIVERSITY OF MICHIGAN-HBRI	NATIONAL CRASHWORTHINESS SEVERITY TEST	09/30/76	01/30/83	55645	22000	14000	0
DOT HS-6-01442	CALSPAN FIELD SERVICES, INC.	NCSS QUALITY CONTROL	01/27/80	09/30/83	135258	41938	24432	0
DOT HS-7-01551	CALSPAN CORP	RESEARCH SAFETY VEHICLE-PHASE III	12/12/79	12/31/83	100500	0	0	0
DOT HS-7-01552	MINICARS INC.	RESEARCH SAFETY VEHICLE-PHASE III	09/29/80	12/31/83	195634	0	0	0
DOT HS-7-01579	CALSPAN FIELD SERVICES, INC.	PEDESTRIAN INJURY CAUSATION PARAMETERS	06/14/81	04/30/83	32824	22750	0	0
DOT HS-7-01588	BUDD COMPANY	LIGHTWEIGHT SUBCOMPACT	04/24/80	11/30/82	578232	0	0	0
DOT HS-7-01617	MAN FACTORS, INC.	DEVELOPMENT OF SPECS FOR PASSIVE BELT RESTRAINTS	06/15/81	05/31/82	27110	3570	0	0
DOT HS-7-01643	AUTOMATED SCIENCES GROUP	STATISTICAL/ANALYTICAL METHODS IN VEHICLE STRESS RESEARCH-II	10/01/77	09/30/82	172555	0	0	0
DOT HS-7-01647	NAVAL BIODYNAMICS LAB	KINEMATIC/KINETIC CHARACTERIZATION	07/09/77	06/30/82	50000	0	0	0

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DOT-HS-7-01661	GEORGETOWN UNIVERSITY	ANATOMICAL CROSS-SECTIONAL GEOM-MASS DISTRIBUTION FOR CHILDREN	12/27/77	11/15/82	42950	0	0	0
DOT-HS-7-01697	NATIONAL BUREAU OF STANDARDS	MODEL SPECIFICATIONS AND TESTING FOR SPEED MEASURING DEVICES - TIME EXT.	09/30/77	06/30/85	37500	0	37500	0
DOT-HS-7-01700	AUTOMATED SCIENCES GROUP	ANALYTICAL SUPPORT FOR AUTOMOTIVE FUEL ECONOMY RESEARCH	01/15/77	12/31/82	209099	0	0	0
DOT-HS-7-01721	VECTOR ENTERPRISES INC.	REAR VIEW MIRROR SYSTEMS	08/15/77	11/15/81	29563	0	0	0
DOT-HS-7-01736	OPINION RESEARCH CORPORATION	SAFETY BELT USAGE IN THE TRAFFIC POPULATION	06/26/80	05/31/81	39166	0	0	0
DOT-HS-7-01741	SOUTHWEST RESEARCH INSTITUTE	PSU FOR NASS	11/10/76	09/30/80	29723	0	0	0
DOT-HS-7-01766	NATIONAL PUBLIC SERVICES RESEARCH INSTIT	DRIVER IMPROVEMENT SYSTEM FOR TRAFFIC VIOLATORS AND ACCIDENT REPEATERS	05/28/77	12/31/81	40000	0	0	0
DOT-HS-7-01773	NEW MEXICO STATE UNIV	RESPONSE OF HUMAN SURROGATES IN SIDE IMPACT	06/30/77	10/30/82	84100	0	0	0
DOT-HS-7-01781	MARKET FACTS, INC.	CONSUMER BEHAVIOR TOWARDS FUEL EFFICIENT VEHICLES	02/26/77	02/25/81	51144	0	0	0
DOT-HS-7-01782	NATIONAL ANALYSIS	CORPORATE STRATEGIES OF AUTOMOTIVE MANUFACTURERS	05/15/77	08/15/81	31919	2448	0	0
DOT-HS-8-01809	MINICARS, INC.	RESEARCH SAFETY VEHICLE	06/30/78	05/31/82	336265	0	0	0
DOT-HS-8-01933	DYNAMIC SCIENCE, INC.	SIDE IMPACTOR-DEVELOPMENT OF TEST DEVICE AND TEST PROCEDURE (TIME EXT-07/01/83)	09/30/78	08/31/83	3714	0	49366	0

E-5

BEST COPY AVAILABLE

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DOT-HS-8-01933	DYNAMIC SCIENCE, INC.	DEVELOP TEST DEVICE AND PROCEDURES TO ASSESS VEHICLE SIDE STRUCTURES	12/04/80	12/31/82	0	130438	0	0
DOT-HS-8-01936	MGA RESEARCH CORP.	ANALYSIS IN SUPPORT OF 400 SERIES ROLLOVER STANDARD	03/22/78	03/21/82	53190	10909	0	0
DOT-HS-8-01938	CALSPAN CORP.	DYNAMIC STATIC CRASH TEST SUPPORT	04/13/78	04/12/82	136380	19068	0	0
DOT-HS-8-01941	MINICARS INC.	DYNAMIC STATIC CRASH TEST SUPPORT	04/13/78	04/12/82	130274	0	0	0
DOT-HS-8-01942	DYNAMIC SCIENCE, INC.	LIGHT TRUCK/VAN PARAMETER STUDY	05/15/78	05/14/81	202729	0	0	0
DOT-HS-8-01944	MICHIGAN, UNIVERSITY OF	MATH MODEL FOR NASS	04/09/78	04/08/81	60100	0	0	0
DOT-HS-8-01950	WESTERN WASHINGTON UNIVERSITY	TWO PASSENGER INTEGRATED RESEARCH VEHICLE	11/03/78	01/31/82	0	30597	0	0
DOT-HS-8-01970	SOUTHERN CALIFORNIA RESEARCH INSTITUTE	DEVELOPMENT AND FIELD TESTS OF PSYCHOPHYSICAL TESTS FOR DWI ARREST	01/25/83	09/30/83	43421	0	0	11502
DOT-HS-8-01979	NAT BUREAU OF STANDARDS, BOULDER, COLO.	FHV88200 ELECTRONICS ANALYSIS-PASSIVE RESTRAINTS	01/29/78	12/31/82	80000	80000	0	0
DOT-HS-8-01992	AUTOMATED SCIENCES GROUP, INC.	DATA MANAGEMENT FACTBOOK	07/31/78	01/30/80	86502	0	0	0
DOT-HS-8-02025	KINETIC RESEARCH	FARS DATA ENHANCEMENT	05/29/78	09/30/81	31585	0	0	0
DOT-HS-8-02026	CALSPAN FIELD SERVICES, INC.	COLLISION DEFORMATION CLASSIFICATION TRAINING PROGRAM	01/15/78	03/31/83	31594	0	0	0
DOT-HS-8-02030	MIDWEST RESEARCH INSTITUTE	TECHNOLOGY ADVANCEMENT FOR DETERRENCE OFF SPEEDING	03/28/78	03/27/81	124850	0	0	0

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DOT HS-8-02031	UNIVERSITY OF MICHIGAN	PROBLEM BEHAVIOR RESEARCH	12/02/78	12/31/82	75430	0	1300	0
DOT HS-8-02045	CALSPAN CORPORATION	DYNAMIC STATIC CRASH TEST SUPPORT	09/02/78	10/01/82	38151	0	0	0
DOT HS-8-02052	SYSTEMS TECHNOLOGY, INC.	FIELD TEST DRUCK DRIVER WARNING SYSTEM	10/31/78	12/31/83	42079	82100	23994	0
DOT HS-8-02064	PADON, SIMS AND SMITH	DEVELOPMENT/REVIEW OF DRIVER TRAINING RESEARCH NEEDS	06/30/78	03/16/81	29795	0	0	0
DOT HS-9-02071	INFORMATICS, INC	NCSA STATISTICAL DATA SYSTEMS	05/06/79	04/30/81	204942	0	0	0
DOT HS-9-02075	NATIONAL PUBLIC SERVICES RESEARCH INST.	ELDERLY DRIVER RETRAINING	08/31/79	12/31/82	47000	0	0	0
DOT HS-9-02079	TRANSPORTATION RESEARCH CENTER OF OHIO	LEASE OF FACILITIES FROM TRC OF OHIO	10/01/79	11/30/83	181087	255280	271725	0
DOT HS-9-02081	TRANSPORTATION ADVISORS, INC.	COMMERCIAL VEHICLE FUEL ECONOMY TEST/ADVISORY SERVICES	12/01/79	05/30/83	125985	0	0	0
DOT HS-9-02085	CALSPAN FIELD SERVICES	COUNTERMEASURES FOR SPECIFIC ALCOHOL ACCIDENT TYPES AND PROBLEMS	01/10/83	09/30/83	0	63000	121395	9870
DOT HS-9-02090	APPLIED SCIENCE ASSOCIATES	EDUCATIONAL MATERIALS TO PROMOTE VOLUNTARY USE OF MOTOR CYCLE HELMETS	09/30/79	12/31/81	0	57040	0	0
DOT HS-9-02093	DYNAMIC SCIENCE, INC.	SYSTEMS ENGINEERING STUDIES	03/12/79	12/31/81	399335	50000	0	0
DOT HS-9-02096	MINICARS, INC.	SYSTEMS ENGINEERING STUDIES	02/19/80	12/31/81	461065	80956	0	0
DOT HS-9-02098	ENSCO, INC.	SYSTEMS ENGINEERING STUDIES	03/15/79	12/31/81	36298	0	0	0

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DOT-HS-9-02101	NY DEPARTMENT OF MOTOR VEHICLES	R&D MOTOR VEHICLE SAFETY PROGRAM REVIEW	09/30/79	12/31/81	95000	0	0	0
DOT-HS-9-02111	SOUTH COAST TECHNOLOGY	AUTOMOTIVE FUEL CONSERVATION TECHNOLOGY	02/26/79	09/30/82	269094	0	0	0
DOT HS-9-02112	IIT RESEARCH INDUSTRIES	EVALUATION OF AUTOMOTIVE FUEL CONSERVATION TECHNIQUES	12/10/78	11/30/82	126334	0	0	0
DOT HS-9-02120	WESTAT, INC.	NASS NON REPORTED ACCIDENT SURVEY	01/15/79	12/31/82	190000	170664	0	0
DOT-HS-9-02131	SYSTEMS TECHNOLOGY	TIRE MIX PERFORMANCE INSPECTION	10/31/78	12/31/80	34107	0	0	0
DOT-HS-9-02141	NEBRASKA DEPT OF MOTOR VEHICLES	FIELD TEST OF DRIVER MANUALS	04/15/79	12/31/82	27674	0	0	0
DOT-HS-9-02177	DYNAMIC SCIENCE, INC.	COUNTERMEASURES FOR SITE IMPACT STUDY	04/04/79	11/30/82	0	0	39446	0
DOT-HS-9-02178	MINICARS, INC.	EVALUATE VOLVO ACRS SYSTEM	03/15/79	09/30/81	155295	0	0	0
DOT-HS-9-02191	NEW YORK DMV	MOTORIZED BICYCLE ACCIDENT PROBLEM	12/11/78	12/31/81	0	100312	0	0
DOT-HS-9-02204	AUTOMATED MANAGEMENT SYSTEMS, INC.	DEVELOPMENT OF NASS MANAGEMENT INFORMATION SYSTEM	10/01/79	09/30/80	31123	0	0	0
DOT-HS-9-02215	CALSPAN CORPORATION	EVALUATION OF PASSIVE RESTRAINT SYSTEM	03/21/79	09/30/81	136672	0	0	0
DOT-HS-9-02221A	US ENVIRONMENTAL PROTECTION AGENCY	IMPLICATION OF DIESEL ENGINES IN FUTURE LIGHT DUTY VEHICLES	04/04/79	12/31/82	234250	51250	0	0
DOT-HS-9-02231	MANAGEMENT ENGINEERS, INC.	MOTOR VEHICLE ACCIDENT INVESTIGATION RESEARCH STUDY FOR WASHINGTON, DC	10/01/78	09/15/83	122000	136000	30369	122531

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DOT-HS-9-02232	CALSPAN FIELD SERVICES, INC.	OPERATION OF ZONE CENTER 'B' FOR NABBS	10/01/78	09/30/83	344000	410000	544510	0
DOT-HS-9-02233	INDIANA UNIVERSITY FOUNDATION	OPERATION OF ZONE CENTER 'A' FOR NABBS	10/01/78	09/30/83	44000	320000	433486	50000
DOT-HS-9-02239	UNIVERSITY OF MICHIGAN (TRI)	RETARDERS FOR HDV'S - EVALUATION OF PERFORMANCE CHARACTERISTICS & IN-SERVICE CGB	12/10/78	06/30/83	180000	0	0	0
DOT-HS-9-02260	ALLEN CORP. OF AMERICA	BASIC TRAINING PROGRAM FOR NABBS	03/19/79	09/30/82	120000	67903	0	0
DOT-HS-9-02273	NATL TECH SYSTEMS (AETL)	DATA COLLECTION SEAT BELTS 10327, 041AETL	01/06/79	12/31/83	55706	14102	53505	0
DOT-HS-9-02274	DYNAMIC SCIENCE	FRONTAL INDICANT TESTING-NCAP-PIGGY BACK TEST ON NEW CAR ASSESSMENT PROGRAM	01/16/81	09/30/83	47937	3970	42766	2480
DOT-HS-9-02284	NATIONAL PUBLIC SERVICES RESEARCH INST.	SUPPLEMENTAL DRIVER SAFETY PROGRAM DEVELOPMENT - TIME EXT TO 02/28/83	04/30/79	02/28/83	94537	0	64993	0
DOT-HS-9-02304	UNIVERSITY OF MICHIGAN-HBRI	IMPROVED LOW BEAM PHOTOMETRICS	08/15/79	08/14/81	83625	31050	0	0
DOT-HS-9-02309	SYSTEMS TECHNOLOGY, INC.	EVALUATION OF ELECTRIC/HYBRID VEHICLES FOR HANDLING/STABILITY	06/11/79	09/30/81	48512	0	0	0
DOT-HS-9-02314	UNIVERSITY OF MICHIGAN	MOTORCYCLE BRAKE TEST PROCEDURES-EQUIPMENT UPGRADE	07/27/79	12/31/82	28650	0	3550	0
DTNH22-80A-07012	OHIO STATE UNIVERSITY	BASIC ORDERING AGREEMENT FOR RESEARCH AND TESTING	10/01/79	09/30/85	30312	0	0	0
DTNH22-80A-07046	US NAT INST ON ALCOHOL ABUSE & ALCOHOLIS	INTERAGENCY W/ NIAAA	03/28/80	09/30/83	165000	0	0	0

E-9

NOT COPY AVAILABLE

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY00	FY01	FY02	FY03
DTNH22-00A-07211	UNIVERSITY OF VIRGINIA	REFINEMENTS TO SAFETY SYSTEMS OPTIMIZATION MODEL	04/11/00	04/10/02	100000	0	0	0
DTNH22-00A-07260	CONSUMER PRODUCT SAFETY COMMISSION	NATIONAL ELECTRONIC INJURY SURVEILLANCE SYSTEM	02/04/00	12/31/02	233040	137101	0	0
DTNH22-00A-07507	U.S. NAVAL CIVIL ENG. LAB	HEAD NECK INJURY DATA ANALYSIS REVEIW OF CRASH DATA INVOLVING ROLLOVERS	07/01/00	06/05/01	74500	0	0	0
DTNH22-00A-07587	FHWA	REVIEW IF CRASH DATA INVOLVING ROLLOVERS	06/00/00	06/05/01	36100	0	0	0
DTNH22-00A-07628	HARRY DIAMOND LABORATORIES	DEVELOPMENT OF FLUIDIC ANTILOCK BRAKE SYSTEM FOR MOTORCYCLES	07/25/00	07/24/01	25000	75000	0	0
DTNH22-00C-07001	MIDWEST RESEARCH INSTITUTE	PSU'S FOR NAGS ST. LOUIS F03	04/25/00	09/30/03	137000	90000	150700	79382
DTNH22-00C-07002	MIDWEST RESEARCH INSTITUTE	PSU FOR NAGS - OMAHA	04/25/00	09/30/03	137000	90000	0	03005
DTNH22-00C-07003	PRC PLANNING & ECONOMICS, INC.	PSU FOR NAGS - CONTRA-COSTA	02/25/00	09/30/03	137000	00000	101000	77000
DTNH22-00C-07004	KAPPA SYSTEMS, INC.	PSU FOR NAGS - ALBANY COUNTY	04/25/00	09/30/03	137000	90000	140700	67340
DTNH22-00C-07005	APPLIED SCIENCES ASSOCIATES	PSU'S FOR NAGS - GILPIN P00	01/20/00	09/30/03	0	90000	139200	67770
DTNH22-00C-07006	MICHIGAN OFFICE OF HWY SAFETY PLANNING	PSU FOR NAGS - GENESEE	02/03/00	09/30/03	137000	90000	117800	04204
DTNH22-00C-07007	MANAGEMENT ENGINEERS	PSU FOR NAGS - LACKAWANNA	02/25/00	09/30/03	137000	90000	110000	119990
DTNH22-00C-07008	ALLEN CORPORATION OF OHIO	PSU'S FOR NAGS - VANDERBILT	01/03/00	06/05/03	127000	90000	60400	00000

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY00	FY81	FY82	FY83
DTM422-00C-07007	KLD ASSOCIATES	PSU FOR NASS RUTHERFORD	03/03/00	06/05/83	120000	90000	21549	53470
DTM422-00C-07010	ANALYTIC SYSTEMS, INC.	PSU'S FOR NASS BERRIEN PDMS	03/03/00	06/05/83	120000	70000	23940	40000
DTM422-00C-07011	VERVE RESEARCH	COMFORT/CONVENIENCE OF SAFETY RELI SYSTEMS 1980 VEHICLES	11/26/79	12/31/81	120233	0	0	0
DTM422-00C-07015	DMK INTERNATIONAL CORPORATION	NASS - WITHIN PSU SAMPLING METHODOLOGY	12/31/79	10/01/83	03033	100390	30068	0
DTM422-00C-07032	NAT'L INST FOR SAFETY RESEARCH	STUDY THE PROBLEMS OF MULTIPLE LICENSES/RECORDS	06/30/00	12/31/83	188128	82543	0	0
DTM422-00C-07033	NAT'L INSTITUTE FOR SAFETY RESEARCH	ANALYSIS OF AGE, EXP. AND LIC. STATUS OF HDV OPERATORS	00/12/00	12/31/82	124870	0	0	0
DTM422-00C-07034	VECTOR ENTERPRISES	IMPROVED COMMERCIAL VEHICLE LIGHTING, MARKING & CONSPICUITY TIME EXT	06/06/00	10/31/85	200090	0	0	0
DTM422-00C-07035	KAPPA SYSTEMS, INC.	MAINTENANCE OF NCSA COMPUTER SYSTEMS	06/05/80	07/30/82	137790	255000	75000	0
DTM422-00C-07042	SOUTHWEST RESEARCH INSTITUTE	NASS ZONE CENTER "C"	02/20/80	12/31/83	344000	320000	275950	150000
DTM422-00C-07043	DYNAMIC SCIENCE	OPERATIONS OF NASS ZONE CENTER "D"	02/20/80	12/31/83	344000	405000	614334	100000
DTM422-00C-07052	DUNLAP AND ASSOCIATES EAST, INC.	CONSPICUITY FOR PEDESTRIANS AND BICYCLISTS	11/01/79	11/25/83	200001	0	0	0
DTM422-00C-07053	AUTOMATED SCIENCES CORP., INC.	THE EFFECTS OF PATROL AND RECORD RELIABILITY	01/00/80	03/30/82	63815	270000	0	0
DTM422-00C-07054	MCR TECHNOLOGY, INC.	EVALUATION OF CONTROLS STANDARDIZATION	06/30/80	07/31/83	140000	0	0	11500

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-80C-07062	MINICARS, INC., KINETIC RESEARCH DIVISION	DOA FOR ANALYTICAL SUPPORT	10/01/79	09/30/82	50000	200000	0	0
DTNH22-80C-07064	SOUTHWEST RESEARCH INSTITUTE	ON-SITE FIELD SUPPORT OF TRANSIT BUS BRAKE DEMONSTRATION PROGRAM TILL TO 6/30/83	07/01/80	06/30/83	243349	0	0	0
DTNH22-80C-07065	MGA RESEARCH, INC.	SUPPLEMENTAL NASC RECONSTRUCTION	01/11/80	12/31/82	51531	81515	0	0
DTNH22-80C-07072	JOHN Z. DELOREAN	PRELIMINARY CRASHWORTHINESS EVALUATION	03/14/80	03/13/82	1110376	0	0	0
DTNH22-80C-07082	KLD ASSOCIATES	EVALUATION OF DRIVER/VEHICLE EFFECTIVENESS MODEL	03/28/80	09/30/82	68278	33118	0	0
DTNH22-80C-07087	KENDRICK & COMPANY	EDITING AND DISTRIBUTION OF CONFERENCE PAPERS	10/25/79	03/31/80	33408	0	0	0
DTNH22-80C-07088	SHERATON NATIONAL HOTEL	PAYMENT OF TRANSLATION COSTS FOR CONFERENCE	10/26/79	12/31/79	43000	0	0	0
DTNH22-80C-07093	ARVIN/CALSPAN ADVANCED TECHNOLOGY CENTER	TRUCK TIRE TRACTION - TIME EXT TO 03/31/83	06/20/80	03/31/83	300600	0	0	0
DTNH22-80C-07110	WILSON HILL ASSOCIATES	CRASH MAINTENANCE DEVELOPMENT	02/20/80	12/31/81	83135	43047	0	0
DTNH22-80C-07113	DYNAMIC SCIENCE	SPECIAL DUMMY THORAXES FOR SIDE IMPACT	11/30/79	12/31/81	141371	177268	0	0
DTNH22-80C-07118	SMITHERS TRANSPORTATION RESEARCH, INC.	UTOGS TREADWEAR VERIFICATION	09/30/80	09/30/82	50960	0	0	0
DTNH22-80C-07131	MARKET FACTS, INC.	ADS AND MARKET INVENTIVE TO INCREASE SALES OF FUEL EFFICIENT VEHICLES	05/23/80	05/23/82	23000	54044	0	0

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY84
DTN422-80C-07155	CHI ASSOCIATES	REFINEMENT OF THE WRECKER COM. PROGRAM	05/30/80	05/29/82	78707	10000	0	0
DTN422-80C-07156	ALDERSON RESEARCH LAB	PROCUREMENT OF THREE CHILD DUMMIES	12/10/79	02/28/80	28860	0	0	0
DTN422-80C-07165	SOUTHWEST RESEARCH INSTITUTE	CRASH INJURY SUSCEPTIBILITY IN CHILDREN COMPARED TO CHILD SURROGATES	03/31/80	03/31/83	602203	0	0	55401
DTN422-80C-07167	KETRON, INC.	IMPROVED CONSPICUITY TO THE SIDES OF MOTORCYCLES/MOPEDS	00/13/80	12/31/82	159549	0	10675	0
DTN422-80C-07179	BUDD CORPORATION	VAN FRONTAL AGGRESSIVITY MODIFICATIONS	03/03/80	03/06/82	126832	36500	0	0
DTN422-80C-07189	UNIVERSITY OF NORTH CAROLINA	IMPACT OF RECENT CHANGES IN THE HIGHWAY SAFETY ENVIRONMENT	04/18/80	04/17/82	37268	18558	0	0
DTN422-80C-07217	AUTOMATED SCIENCES GROUP INC.	SOFTWARE SUPPORT FOR R&D ACTIVITIES	02/30/80	12/31/82	39909	158839	0	0
DTN422-80C-07231	ANALYTIC SYSTEMS	PSU'S FOR NADS LAKE - P06	09/18/80	06/05/83	60000	152700	147000	147000
DTN422-80C-07232	KLD ASSOCIATES	PSU FOR NADS-SCHENECTADY	09/18/80	06/05/83	60000	152660	60000	110000
DTN422-80C-07233	THE FRANKLIN INSTITUTE	PSU'S FOR NADS PHILADELPHIA - P31	09/18/80	06/05/83	60000	152660	137300	166000
DTN422-80C-07234	CALSPAN FIELD SERVICES	PSU FOR NADS ALLEGHENY	09/18/80	06/05/83	60000	152660	102000	040000
DTN422-80C-07235	ANALYTIC SYSTEMS	PSU'S FOR NADS BERNALILLO - P02	09/18/80	06/05/83	60000	152660	82500	71710
DTN422-80C-07236	MIDWEST RESEARCH INSTITUTE	ESTABLISHMENT AND OPERATION OF NADS PSU-03 SOUTH DAKOTA	09/18/80	06/05/83	60000	100000	114815	46985
DTN422-80C-07237	KAPPA SYSTEMS, INC.	PSU'S FOR NADS SEATTLE - P05	09/18/80	06/05/83	60000	100000	90000	85000

E-13

BEST COPY AVAILABLE

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTN122-88C-07238	ELRICK AND LAVIDGE, INC.	PSU'S FOR NASS SOUTH TEXAS	09/18/80	06/05/83	60000	100000	91007	50577
DTN122-88C-07239	DYNAMIC SCIENCE, INC.	ESTABLISHMENT AND OPERATION OF PSU'S FOR NASS - KANKAKEE	09/18/80	06/05/83	60000	100000	95100	10370
DTN122-88C-07240	ALABAMA TRAFFIC SAFETY CENTER	PSU FOR NASS TUSCALOOSA	09/18/80	06/05/83	60000	152657	105000	63000
DTN122-88C-07241	J. A. REYER ASSOCIATES, INC.	PSU FOR NASS CHICAGO	09/18/80	06/05/83	236000	107000	0	75101
DTN122-88C-07242	KAPPA SYSTEMS	PSU'S FOR NASS FT LAUDERDALE POS1	09/18/80	06/05/83	40000	185000	185000	80515
DTN122-88C-07243	FRANKLIN INSTITUTE	PSU'S FOR NASS DELAWARE COUNTY POS8	09/18/80	06/05/83	40000	120000	103400	27100
DTN122-88C-07244	SOUTHWEST RESEARCH INSTITUTE	PSU FOR NASS DALLAS COUNTY	09/18/80	06/05/83	40000	167000	130400	75779
DTN122-88C-07245	ALABAMA TRAFFIC SAFETY CENTER	PSU'S FOR NASS SHELBY COUNTY, ALABAMA POS2	09/18/80	06/05/83	40000	185000	102000	110000
DTN122-88C-07246	MANAGEMENT ENGINEERS, INC.	PSU'S FOR NASS ERIC POS7	09/18/80	06/05/83	40000	120000	31700	90000
DTN122-88C-07247	MICHIGAN OFFICE OF HWY SAFETY PLANNING	PSU'S FOR NASS MUSKEGON POS	09/18/80	06/05/83	40000	107000	06653	40000
DTN122-88C-07248	KLD ASSOCIATES	PSU'S FOR NASS ULSTER POS6	02/19/82	06/05/83	40000	167000	06500	07000
DTN122-88C-07249	TEXAS A&M RESEARCH FOUNDATION	PSU'S FOR NASS ARKANSAS POS3	02/19/82	06/05/83	40000	107000	50943	100000
DTN122-88C-07250	CALSPAN FIELD SERVICES	PSU'S FOR NASS SKAGIT POS6	02/19/82	06/05/83	40000	100000	72740	09000
DTN122-88C-07268	USSEA THE PRISM CORPORATION	CONSUMER ACCEPTANCE OF RV FEATURES	04/09/80	04/09/81	40059	0	0	0
DTN122-88C-07270	LAWRENCE HARRISON AND ASSOCIATES	DEMOGRAPHIC, SITUATION ANAL & MOTIVATIONAL FACTORS AFFECTING RESTRAINT USAGE IN AUTO	08/10/80	12/31/82	25000	0	57331	0

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTN422-88C-07283	OPINION RESEARCH CORPORATION	SAFETY BELT USE IN THE TRAFFIC POPULATION	08/31/80	04/30/83	250000	9735	40610	14125
DTN422-88C-07284	CENTER FOR THE ENVIRONMENT AND MAN, INC.	DEVELOPMENT OF A METHODOLOGY FOR SAFETY RESEARCH	09/25/80	06/01/83	130000	117555	0	0
DTN422-88C-07307	SYSTEMS TECHNOLOGY, INC.	HEAVY DUTY VEHICLE SPLASH AND SPRAY REDUCTION	09/30/80	09/30/82	50000	0	0	0
DTN422-88C-07325	DUNLAP AND ASSOCIATES	INVESTIGATE ACCIDENT RISK LEVELS FOR HEART ATTACK VICTIMS	08/27/80	09/30/82	132037	0	0	0
DTN422-88C-07336	NATIONAL PUBLIC SERVICES RESEARCH INST.	KNOWLEDGE AND PERFORMANCE TESTS FOR LICENSING HEAVY VEHICLE OPERATORS- TIME EXT.	08/11/80	05/15/84	380000	0	0	0
DTN422-88C-07344	MICHIGAN, UNIVERSITY OF	PARAMETRIC ANALYSIS OF HEAVY TRUCK DYNAMIC STABILITY	09/30/80	12/31/82	100000	0	0	0
DTN422-88C-07359	CHI ASSOCIATES	NCSA DATA SYSTEM MAINTENANCE	09/11/80	09/30/81	93802	0	0	0
DTN422-88C-07360	ABT ASSOCIATES, INC.	YOUNG DRIVER RISK TAKING	09/30/80	12/31/82	169130	0	0	0
DTN422-88C-07394	APPLIED SCIENCE ASSOCIATES, INC	ASSESSMENT OF PEDESTIAN AND BICYCLE PROGRAMS	09/30/80	09/30/82	149921	0	0	0
DTN422-88C-07417	SOUTHWEST RESEARCH INSTITUTE	DEVELOPMENT OF FORMS FOR NADS/FIRM ENVIRONMENTAL DATA COLLECTION	07/28/80	06/30/82	19002	58181	0	0
DTN422-88C-07420	NAT'L INSTITUTE FOR SAFETY	ANALYSIS OF EFFECTIVENESS OF LICENSE SUSP/REV PROGRAMS	09/30/80	12/31/82	196783	0	0	0
DTN422-88C-07459	PAULN, SIMS, SMITH AND ASSOCIATES	MOTIVATION OF EMPLOYEES TO ENROLLING THEM IN EMPLOYEES TO USE SAFETY BELTS	09/30/80	06/30/83	50000	19009	79516	6919

E-15

BEST COPY AVAILABLE

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTN422-80C-07450	CALSPAN FIELD SERVICES, INC.	STEERING COLUMN SPECIAL STUDY-DATA ANALYSIS	07/30/80	07/30/81	55672	0	0	0
DTN422-80C-07455	CHI ASSOCIATES, INC.	IMPAIRMENT SCALING FROM TQHE ABBREVIATED INJURY SCALES	06/30/80	01/31/84	0	3973	105714	121907
DTN422-80C-07457	CALSPAN FIELD SERVICES, INC.	STUDY OF HEAVY TRUCK OCCUPANT CRASH PROTECTION	07/30/80	06/30/82	200000	17074	0	0
DTN422-80C-07475	DUNLAP & ASSOCIATES	DEVELOPMENT AND TEST OF URBAN/RURAL PEDESTRIAN SAFETY MESSAGES	09/30/80	12/31/82	367054	0	0	0
DTN422-80C-07484	HEXCEL CORPORATION	FABRICATION OF ENERGY ABSORBING HONEYCOMB ASSEMBLIES	03/11/80	12/31/80	48750	0	0	0
DTN422-80C-07502	UNIVERSITY OF MICHIGAN (UATRI)	ADVANCED DUMMY ANTHROPOMETRY TIME EXT.	02/26/80	12/31/83	200000	0	30040	11,000
DTN422-80C-07515	WESTAT, INC.	NATIONAL EXPOSURE DATA SYSTEM PHASE AND II	09/23/80	12/31/81	130713	11622	0	0
DTN422-80C-07518	THE PRISM CORP.	PRODUCTION OF RSV FILM	05/10/80	12/31/81	30443	2561	0	0
DTN422-80C-07530	MINICARS, INC.	COLLISION AVOIDANCE SYSTEM - COST BENEFIT ANALYSIS	09/29/80	09/30/82	50000	101948	0	0
DTN422-80C-07531	CALSPAN CORP., N.Y.	RSV PHASE IV	05/23/80	06/30/82	128827	0	0	0
DTN422-80C-07537	CALSPAN CORPORATION	HEAVY TRUCK CRASH TESTS	07/21/80	12/31/80	59975	0	0	0
DTN422-80C-07539	CHI ASSOCIATES	PEDESTRIAN IMPAIRMENT PILOT STUDY BIOMECHANICS/PEDESTRIAN	02/16/82	02/15/83	93862	0	28594	0
DTN422-80C-07557	SYSTEMS TECHNOLOGY, INC.	STABILITY OF VEHICLE COMBINATIONS UNDER CROSSWIND AND DIST	03/26/80	12/31/82	50000	100000	0	0

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTN422-88C-87561	WESTAT, INC.	NASS ESTIMATION PROCEDURES	06/01/80	09/30/82	50000	00000	94845	0
DTN422-88C-87563	DECISION SCIENCE CONSORTIUM	BEHAVIORAL TESTS TO DETECT IMPAIRMENT	09/29/80	12/31/81	67766	0	0	0
DTN422-88C-87568	DUNLAP AND ASSOCIATES EAST, INC.	DEVELOP AND TEST RURAL PED SAFETY REGULATIONS	09/22/80	04/30/83	144376	0	0	0
DTN422-88C-87569		STEERING ASSEMBLY EVALUATION AND IMPROVEMENT STUDY	09/05/80	09/30/82	192600	0	0	0
DTN422-88C-87591	R.L. POLK AND CO.	VINA SYSTEM AND MAKE BY MODEL REPORT	09/22/80	12/31/80	98925	0	0	0
DTN422-88C-87601	NATIONAL ACADEMY OF SCIENCES TRB	TRB SUPPORT FOR NHTSA	10/01/79	09/30/81	76000	9000	0	0
DTN422-88C-87609	FAILURE ANALYSIS ASSOCIATES	RELIABILITY STUDY FOR AUTOMATIC BELT SYSTEMS	09/29/80	12/31/82	82844	0	0	0
DTN422-88C-87611	VERVE RESEARCH CORP.	COMFORT/CONVENIENCE OF BELT SYSTEMS IN 1981 CARS	06/30/80	05/31/82	81675	0	0	0
DTN422-88C-87622	TEXAS A&M RESEARCH FOUNDATION	MOTORCYCLE BRAKE TEST PROCEDURE VALIDATION - PHASE I	09/30/80	03/11/83	67297	0	0	0
DTN422-88C-87635	MINICARS, INC.	MINICARS REQUIRED TASKS	09/08/80	09/30/81	59276	0	0	0
DTN422-88C-17035	INFORMATICS, INC	NCSA MAINTENANCE	10/01/79	09/30/81	84000	130000	0	0
DTN422-88C-17062	ABT ASSOC., INC.	BOA FOR ANALYTICAL SUPPORT	09/30/80	12/31/82	250000	200000	222000	0
DTN422-88C-17278	LAWRENCE JOHNSON AND ASSOCIATES	DEMOGRAPHIC SITUATIONAL AND MOTIVATIONAL FACTORS AFFECTING RESTRAINT USE IN AUTO	09/28/80	03/31/83	25000	0	0	25720

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-80C-27835	COMPUTER DATA SYSTEMS	COMPUTER DATA SUPPORT	09/01/80	09/30/82	84000	130000	50000	0
DTNH22-80C-37835	SCIENCE MANAGEMENT	NCBA COMPUTER SUPPORT	09/01/80	09/30/82	83000	90000	50000	0
DTNH22-80F-07229	ALLEN CORPORATION	BASIC TRAINING FOR MASS	06/27/80	12/31/80	47329	0	0	0
DTNH22-80F-07341	DIGITAL EQUIPMENT CORPORATION	PROCUREMENT OF MINICOMPUTER MASS STORAGE EQUIPMENT	08/18/80	12/31/80	33815	0	0	0
DTNH22-80F-07358	INTERFACE INC	PURCHASE 40 0 LOAD CELLS	02/29/80	07/31/80	42180	0	0	0
DTNH22-80F-07409	METRAPLEX CORP.	EXPANSION OF VRTC MULTIPLEXING SYSTEM	03/28/80	09/30/80	70293	0	0	0
DTNH22-80I-07548	AMER SOCIETY OF TESTING MATERIALS	ASTM FUEL EFFICIENT ENGINE OILS DEMO PROGRAM	09/26/80	09/30/80	30000	0	0	0
DTNH22-80P-07127	WEIGHTMAN ADVERTISING	PUBLIC SERVICE ADS FOR THE ASV	10/23/79	09/30/80	20000	0	0	0
DTNH22-80P-07359	KAPPA SYSTEMS, INC.	MASS MAINTENANCE	10/01/79	09/30/80	34926	0	0	0
DTNH22-81C-05118	MACRO SYSTEMS, INC.	DWI ENFORCEMENT TRAINING	11/15/80	11/15/83	0	254596	0	10567
DTNH22-81C-07008	MBA RESEARCH CORPORATION, NEW YORK	ANALYTICAL STUDY OF NEW VEHICLE ROLLOVER TEST DEVICE	02/23/81	06/30/82	0	40017	0	0
DTNH22-81C-07009	AUTOMATED SCIENCES GROUP, INC.	ANALYSIS OF CRASH TEST DATA AND VEHICLE STRUCTURES	03/18/81	03/17/82	0	71796	0	0
DTNH22-81C-07053	AUTOMATED SCIENCES GROUP, INC.	VEHICLE STRUCTURES ANALYSIS AND DATA PROCESSING	02/01/82	12/31/83	0	270692	92000	0
DTNH22-81C-07060		FARG STATE CONTRACTS- NEW JERSEY	10/01/80	12/31/82	0	38159	41291	0
DTNH22-81C-07063	STATE OF ILLINOIS	FARG STATE CONTRACT - ILLINOIS	01/01/81	12/31/82	0	69050	75500	41000

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-81C-07064	STATE OF ARKANSAS	FARS STATE CONTRACT - ARKANSAS	01/01/81	12/31/82	0	35856	37962	37000
DTNH22-81C-07065	STATE OF IOWA	FARS STATE CONTRACT - IOWA	01/01/81	12/31/82	0	26319	22886	27000
DTNH22-81C-07066	STATE OF COLORADO	FARS STATE CONTRACT - COLORADO	01/01/81	12/31/82	0	9156	57734	46000
DTNH22-81C-07067	STATE OF ARIZONA	FARS STATE CONTRACT - ARIZONA	01/01/81	12/31/82	0	24836	0	41154
DTNH22-81C-07071	UNIVERSITY OF NORTH CAROLINA	ENFORCEMENT AND PUBLIC INFORMATION FOR THE DETERRENCE OF DWI	12/31/80	12/31/81	0	899800	0	0
DTNH22-81C-07071	UNIVERSITY OF NORTH CAROLINA	ENFORCEMENT AND PI STRATEGIES FOR THE GENERAL DETERRENCE OF DWI	12/31/80	12/31/84	0	750000	143867	193000
DTNH22-81C-07075	ADVANCED TECHNOLOGY, INC.	SUPPORT FOR AUTOMOTIVE SAFETY RESEARCH	08/24/81	12/31/83	0	300000	0	0
DTNH22-81C-07083	UNIVERSITY OF TENNESSEE	FACTORS - CONSUMER USE & ACCEPTANCE OF CHILD RESTRAINT SYSTEMS	04/22/81	12/01/83	0	83339	0	0
DTNH22-81C-07085	MINICARS, INC.	PHASE II MINICARS MIV PROGRAM	12/11/80	12/31/83	0	606818	49997	701700
DTNH22-81C-07086	PORTER, NOVELLI & ASSOC, INC.	IDENTIFY NETWORKS FOR MESSAGES TO INCREASE SEAT BELT USE	02/25/81	12/31/82	0	55266	0	0
DTNH22-81C-07095	CALSPAN FIELD SERVICES, INC.	INDEPTH ACCIDENT INVESTIGATIONS	07/29/83	09/30/84	0	122500	0	15000
DTNH22-81C-07096	PERCEPTRONICS	DEVELOP AND TEST MOTIVATIONAL APPROACHES TO INCREASE SEAT BELT USE	01/23/81	09/30/82	0	49988	0	0
DTNH22-81C-07099	TRAFFIC SAFETY RESEARCH CORPORATION	PEDESTRIAN ACCIDENT INVESTIGATION - DATA SUPPORT (PAIDS)	02/22/81	12/31/83	0	130913	0	35099

E-19

BEST COPY AVAILABLE

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-81C-07100	CALSPAN, INC.	TIRE PARAMETER MEASUREMENT	01/30/81	12/31/84	0	127619	49392	25169
DTNH22-81C-07104	OPPORTUNITY SYSTEMS, INC.	LEADING CAUSE OF DEATH SOFTWARE	11/20/81	11/19/82	0	31600	1020	0
DTNH22-81C-07100	BATTELLE MEMORIAL INSTITUTE	EXPERIMENTAL EVALUATION OF COMPLIANCE TECHNIQUES FOR PEDESTRIAN PROTECTION	01/12/81	07/01/84	0	381560	0	150000
DTNH22-81C-07113	DYNAMIC SCIENCE	TO 05 SIDE IMPACT TESTING	12/16/80	09/30/83	0	0	436	63512
DTNH22-81C-07205	KAPPA SYSTEMS, INC.	PSU'S FOR NASS - COOK COUNTY - P08	04/25/82	09/30/83	0	49042	154910	245512
DTNH22-81C-07206	KLD ASSOCIATES, INC.	PSU'S FOR NASS - RHODE ISLAND - P39	09/30/81	09/30/84	0	49042	74900	130000
DTNH22-81C-07337	VECTOR ENTERPRISES, INC.	FIELD TEST EVALUATION OF REARVIEW MIRROR SYSTEMS	09/30/81	06/30/85	0	100000	99996	95505
DTNH22-81C-07364	ODD CORPORATION	PSU FOR NASS CHARLES/PG P030	08/20/81	12/31/84	0	49042	113900	125000
DTNH22-81C-07365	NATIONAL CAPITAL SYSTEMS, INC.	PSU FOR NASS MONTGOMERY COUNTY P037	03/31/82	12/31/84	0	49042	113900	101000
DTNH22-81C-07366	UNITED MANAGEMENT SYSTEMS	PSU'S FOR NASS PIMA COUNTY - P087	03/31/82	06/05/83	0	49042	154910	141016
DTNH22-81C-07499	WILSON-HILL ASSOCIATES	CRASH PROGRAM MAINTENANCE AND DEVELOPMENT TIME EXT TO 12/31/82	04/25/81	12/31/82	0	50000	53014	0
DTNH22-81C-07518	UNIV. OF MICHIGAN-HSRI	IN-DEPTH INVESTIGATION OF CRASHES INVOLVING CHILDREN--MICHIGAN	09/29/81	09/30/83	0	85965	0	0
DTNH22-81C-07606	STATISTICA, INC.	REVIEW OF MOTORCYCLE EXPOSURE DATA	07/24/81	12/31/82	0	65913	0	0

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-81C-87617	COMSIS CORPORATION	NATIONAL ACCIDENT SAMPLING SYSTEM (NASS) FILE ANALYSIS 1981	01/29/83	03/31/83	0	90092	41715	42970
DTNH22-81C-17060	STATE OF NEW YORK	FARS STATE CONTRACT - NEW YORK	01/01/81	12/31/82	0	90120	104175	75000
DTNH22-81C-17062	STATE OF FLORIDA	FARS STATE CONTRACT - FLORIDA	01/01/81	12/31/82	0	0	0	52390
DTNH22-81C-17063	STATE OF INDIANA	FARS STATE CONTRACTS - INDIANA	01/01/81	12/31/82	0	35530	46492	29000
DTNH22-81C-17065	STATE OF KANSAS	FARS STATE CONTRACT - KANSAS	01/01/81	12/31/82	0	28319	0	26000
DTNH22-81C-17067	STATE OF CALIFORNIA	FARS STATE CONTRACTS - CALIFORNIA	01/01/81	12/31/82	0	131600	141374	77746
DTNH22-81C-17085	VOLKSWAGENMERKS OF AMERICA	PHASE II, VW MID PROGRAM	12/11/80	06/30/83	0	1147895	358700	0
DTNH22-81C-17205	GOODELL-BRIVAS, INC.	PSU'S FOR NASS WAYNE P009	02/17/82	06/05/83	0	49042	104910	165300
DTNH22-81C-17206	KAPPA SYSTEMS, INC.	PSU'S FOR NASS - DADE CO. - P56	09/30/81	09/30/84	0	49042	113900	124000
DTNH22-81C-27059	STATE OF MASSACHUSETTS	FARS STATE CONTRACTS - MASSACHUSETTS	01/01/81	12/31/82	0	60106	37433	37483
DTNH22-81C-27062	STATE OF GEORGIA	FARS STATE CONTRACT - GEORGIA	01/01/81	12/31/82	0	22904	20734	33300
DTNH22-81C-27063	STATE OF MICHIGAN	FARS STATE CONTRACTS - MICHIGAN (CHANGE REGIONAL CTM TO SAMI RICHIE)	01/01/81	12/31/82	0	135296	73046	79956
DTNH22-81C-27064	STATE OF LOUISIANA	FARS STATE CONTRACT - LOUISIANA	01/01/81	12/31/82	0	46052	42592	0
DTNH22-81C-27065	STATE OF MISSOURI	FARS STATE CONTRACT - MISSOURI	01/01/81	12/31/82	0	103411	94431	0
DTNH22-81C-27068	STATE OF OREGON	FARS STATE CONTRACT - OREGON	01/01/81	12/31/82	0	42715	0	26900

E-21

BEST COPY AVAILABLE

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-81C-27113	MCR TECHNOLOGY, INC.	BIDE IMPACT TESTING	12/18/80	09/30/83	0	41290	0	0
DTNH22-81C-27205	KLD ASSOCIATES, INC.	PSU'S FOR NASS MAUKESHA PO10	01/19/83	06/05/83	0	49042	72900	125450
DTNH22-81C-27206	KLD ASSOCIATES, INC.	PSU'S FOR NASS - KNOX CO. - P57	09/30/81	09/30/84	0	49042	124910	152000
DTNH22-81C-37061	STATE OF VIRGINIA	FARS STATE CONTRACT - VIRGINIA	01/01/81	12/31/82	0	0	0	26300
DTNH22-81C-37062	STATE OF KENTUCKY	FARS STATE CONTRACT - KENTUCKY	01/01/81	12/31/82	0	0	34923	35700
DTNH22-81C-37063	STATE OF MINNESOTA	FARS STATE CONTRACT - MINNESOTA	01/01/81	12/31/82	0	0	39359	0
DTNH22-81C-37067	STATE OF NEVADA	FARS STATE CONTRACT - NEVADA	01/01/81	12/31/82	0	0	27744	25500
DTNH22-81C-37205	MIDWEST RESEARCH INSTITUTE	PSU'S FOR NASS GREEN PO12	03/24/82	06/05/83	0	49042	75900	130000
DTNH22-81C-37206	KIMLEY-HORN RESEARCH INSTITUTE, INC.	PSU FOR NASS WAKE CO PO58	01/01/81	06/05/83	0	49042	113900	133000
DTNH22-81C-47063	STATE OF OHIO	FARS STATE CONTRACT - OHIO	01/01/81	12/31/82	0	0	0	34710
DTNH22-81C-47064	STATE OF TEXAS	FARS STATE CONTRACT - TEXAS	01/01/81	12/31/82	0	0	40000	45000
DTNH22-81C-47066	STATE OF UTAH	FARS STATE CONTRACT - UTAH	01/01/81	12/31/82	0	0	56200	36610
DTNH22-81C-47205	STATE OF MICHIGAN	PSU'S FOR NASS WASHTENAW PO11	09/30/81	06/05/83	0	49042	100910	173035
DTNH22-81C-47206	ALLEN CORPORATION OF AMERICA	PSU FOR NASS MISSISSIPPI PO59	09/30/81	06/05/83	0	49042	113900	110000
DTNH22-81C-57063	STATE OF WISCONSIN	FARS STATE CONTRACT - WISCONSIN	01/01/81	12/31/82	0	0	29004	32600
DTNH22-81C-57066	STATE OF WYOMING	FARS STATE CONTRACT - WYOMING	01/01/81	12/31/82	0	0	28515	0

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-82A-07327	HARRY DIAMOND LABORATORIES	DEVELOPMENT OF FLUIDIC ANTILOCK BRAKE SYSTEM FOR MOTORCYCLES - PHASE IV	06/15/82	05/31/84	0	0	200000	137000
DTNH22-82A-37046	MBA RESEARCH CORPORATION	RESTRAINT SYSTEM RESEARCH, DEVELOPMENT AND TESTING	02/22/81	12/31/82	0	0	70098	0
DTNH22-82C-03006	TULANE UNIVERSITY	EVALUATION OF THE EFFECTS OF REINSTATEMENT OF MANDATORY HELMET LAW IN LOUISIANA	02/15/83	12/31/83	0	0	0	34234
DTNH22-82C-07001	TRANSPORTATION RESEARCH BD	HIGHWAY SAFETY LITERATURE SEARCH EXPENDITURES-NATL CTR FOR STATS & ANALYSIS	03/22/82	12/31/83	0	0	169341	0
DTNH22-82C-07003	UNIVERSITY OF NORTH CAROLINA, HSRC	STATE AND NATIONAL ACCIDENT SUMMARY FILES	11/13/81	12/31/82	0	0	49649	0
DTNH22-82C-07032	VEHICLE PURCHASE	SIDE IMPACT CITATION PROCUREMENT	12/01/81	11/30/82	0	0	32639	0
DTNH22-82C-07039	NATIONAL ACADEMY OF SCIENCES, TRB	TRB SUPPORT FOR NHTSA RESEARCH AND DEVELOPMENT	01/28/83	12/31/84	0	0	100000	50000
DTNH22-82C-07041	MBA RESEARCH CORPORATION	TEST SITE INSTRUMENTATION STUDY - PHASE II	02/03/82	05/31/83	0	0	172049	31632
DTNH22-82C-07043	AUTOMATED SCIENCES GROUP, INC.	PROCURE ADDITIONAL MANPOWER SUPPORT UNDER ASD SUPPORT CONTRACT	01/06/82	03/31/84	0	0	277510	112575
DTNH22-82C-07045	IIT RESEARCH INSTITUTE	OPTICAL ENGINEERING RES OF NEW & USED AUTOMOTIVE GLAZING	02/03/82	06/30/83	0	0	153302	0
DTNH22-82C-07047	MBA RESEARCH CORPORATION	COMP MODELING OF SIDE IMPACT PENETRATION OF VAR SIZE DUMMIES - CRASH SURVIVABIL	06/15/82	05/14/83	0	0	69210	0

E-23

BEST COPY AVAILABLE

BEST COPY AVAILABLE

E-24

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTN422-81C-57205	INDIANA UNIVERSITY	PSU'S FOR NASS BENTON PO13	01/01/81	06/05/83	0	49042	97436	136464
DTN422-81C-57206	SUNBELT RESEARCH CORPORATION	PSU FOR NASS LOUISIANA PO60	09/30/81	06/05/83	0	49042	113900	135000
DTN422-81C-67062	STATE OF SOUTH CAROLINA	FARS STATE CONTRACT - SOUTH CAROLINA	01/01/81	12/31/82	0	0	32783	31900
DTN422-81C-67205	MIDWEST RESEARCH INSTITUTE	PSU FOR NASS APPANOOSE PO14	03/31/82	06/05/83	0	49042	113900	80377
DTN422-81C-67206	PRC PLANNING AND ECONOMICS, INC.	NASS SITE - P88 - LOS ANGELES CITY - TERMINATION	01/01/81	12/31/82	0	49042	154910	0
DTN422-81C-77062	STATE OF TENNESSEE	FARS STATE CONTRACT - TENNESSEE	01/01/81	12/31/82	0	0	37193	25000
DTN422-81C-77205	KLD ASSOCIATES, INC.	PSU FOR NASS KINGS PO34	09/30/81	06/05/83	0	49042	154910	45000
DTN422-81C-77206	DYNAMIC SCIENCE, INC.	PSU FOR NASS - LOS ANGELES COUNTY	01/01/81	12/31/81	0	49042	154910	0
DTN422-81C-87088	CALSPAN CORPORATION	FMVSS NO. 214 DUMMY SUPPORT TESTING	04/26/81	06/30/84	0	39177	16007	136092
DTN422-81C-87205	CALSPAN FIELD SERVICES, INC.	PSU'S FOR NASS - BOSTON - P35	09/30/81	09/30/84	0	49042	154910	156000
DTN422-81C-87206	PRC PLANNING AND ECONOMICS, INC.	PSU FOR NASS DALLAS CITY PO86	09/30/81	06/05/83	0	49042	154910	160000
DTN422-81C-97205	CALSPAN FIELD SERVICE, INC.	PSU'S FOR NASS - BUFFALO - P36	01/01/81	09/30/84	0	49042	107910	130000
DTN422-81F-07136	ALANTHUS DATA COMMUNICATIONS CORP	PURCHASE 500 UNITS	05/08/81	09/30/81	0	00350	0	0
DTN422-81P-07528	LOCAL PURCHASE/SRL-46	PURCHASE FOR COMPUTER SIMULATION MODELS	06/24/81	09/30/81	0	25132	0	0
DTN422-82A-07046	UNIVERSITY OF MICHIGAN	RESTRAINT SYSTEM RESEARCH, DEVELOPMENT AND TESTING	11/01/81	12/31/82	0	0	55668	0

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-82C-07050	NATIONAL INSTITUTE FOR SAFETY RESEARCH	FARS TRAINING PROGRAM FOR STATE ANALYSIS	06/30/82	12/31/83	0	0	132000	138553
DTNH22-82C-07051	OPPORTUNITY SYSTEMS, INC.	ANALYSIS OF BMCS ACCIDENT DATA FILES	12/18/81	12/31/83	0	0	79312	41256
DTNH22-82C-07052	ALLEN CORPORATION OF AMERICA	EXECUTE NASS BASIC TRAINING CYCLE FOR PHASE IV TEAMS	01/19/82	12/31/83	0	0	219818	47328
DTNH22-82C-07055	POLARIS RESEARCH AND DEVELOPMENT	POTENTIAL EFFECTS OF EARLY AGE ALCOHOL ABUSE PREV PROGS ON DWI - TIME EXT	06/04/83	10/31/83	0	0	163946	0
DTNH22-82C-07058	COMBIS CORPORATION	ASSESSMENT OF PRE-CRASH SPEED ESTIMATES AND DEVELOPMENT OF SPEED PROTO 01/31/83	03/18/82	12/31/83	0	0	32114	0
DTNH22-82C-07126	GOODSELL BRIVAS, INC.	RESTRAINT SYSTEM USAGE IN THE TRAFFIC POPULATION	01/28/83	12/31/84	0	0	225000	253729
DTNH22-82C-07142	ALDERSON RESEARCH LABORATORIES	PROCUREMENT OF ANTHROPOMORPHIC TEST DEVICE	07/09/82	09/30/82	0	0	42854	0
DTNH22-82C-07166	SOUTHEASTERN MICHIGAN HEALTH ASSOC.	FIELD TEST OF SAFETY BELT MOTIV. TRAINING SEMINAR FOR AUTO DEALERS & PERSONNEL	06/30/82	06/30/83	0	0	48448	0
DTNH22-82C-07186	UNIVERSITY OF PENNSYLVANIA	MECHANISMS OF PRIMARY LESIONS IN HEAD INJURIES	03/29/83	12/31/84	0	0	0	98536
DTNH22-82C-07187	UNIVERSITY OF PENNSYLVANIA	BIOMECHANICS OF HEAD INJURY IN PHYSICAL AND TISSUE MODELS	03/29/83	12/31/84	0	0	0	98549
DTNH22-82C-07237	DYNAMIC SCIENCE, INC.	LOAD CELL BARRIER DATA COLLECTION-1981 NEW CAR ASSESSMENT	05/13/82	12/31/83	0	0	34246	0
DTNH22-82C-07247	WASHINGTON HOSPITAL CENTER	INDEPTH FOLLOW-UP OF LONG TERM CONSEQUENCES OF HEAD AND NECK INJURY	03/07/82	09/30/84	0	0	81300	102262

E-25

TEXT COPY AVAILABLE

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-82C-07259	COMSIB CORPORATION	QUALITY CONTROL FOR THE FARS	03/15/82	12/31/83	0	0	56621	225025
DTNH22-82C-07260	SBC-FEDERAL SYSTEMS	ADDITIONAL FUNDING FOR MANPOWER MAINTENANCE (NCSA)	06/25/82	09/30/84	0	0	70000	0
DTNH22-82C-07261	COMPUTER DATA SYSTEMS, INC.	SUPPORT FOR NASS DATA COLLECTIONS	01/15/81	09/30/84	0	0	75000	65000
DTNH22-82C-07262	KAPPA SYSTEMS	SUPPORT FOR NASS DATA COLLECTIONS	01/31/81	09/30/84	0	0	0	145000
DTNH22-82C-07262	KAPPA SYSTEMS, INC.	SUPPORT FOR NASS DATA COLLECTIONS	08/24/82	09/30/84	0	0	130000	0
DTNH22-82C-07263	INFORMATICS	MAINTENANCE OF NCSA COMPUTER SYSTEMS	06/25/82	09/30/83	0	0	30000	104000
DTNH22-82C-07271	PERCEPTRONICS, INC.	PERCEPTION OF RISK APPROACHES DESIGNED TO INCREASE SAFETY BELT USAGE	04/30/82	09/30/83	0	0	175000	78284
DTNH22-82C-07275	INDIANA UNIVERSITY	OPERATIONS OF CENTRAL ZONE CENTER A	09/30/82	12/31/83	0	0	10000	600000
DTNH22-82C-07276	CALSPAN FIELD SERVICE, INC.	NASS ZONE CENTER "B" BUFFALO	09/30/82	12/31/83	0	0	10000	650000
DTNH22-82C-07279	PRISM CORPORATION	8TH ANNUAL FARS WORKSHOP	01/01/82	12/31/82	0	0	31319	0
DTNH22-82C-07330	MGA RESEARCH CORPORATION	DEVELOPMENT OF AN AUTOMATED RECONSTRUCTION PROCEDURE	11/16/82	12/31/83	0	0	90000	29050
DTNH22-82C-07357	SOUTHWEST RESEARCH INSTITUTE	NASS/FHWA SPECIAL STUDIES TRAINING	02/15/82	06/15/83	0	0	0000	27101
DTNH22-82C-07358	THE PRISM CORP.	SUPPORT FOR 9TH INTERNATIONAL ESV CONFERENCE	07/01/82	12/31/82	0	0	69999	0
DTNH22-82C-07381	SOUTHWEST RESEARCH INSTITUTE	AN EVALUATION OF THE EFFECT OF TIRE DEFLECTION ON TIRE TREADWEAR	12/15/82	03/03/83	0	0	34942	41101

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTN422-82C-87392	VOLKSWAGEN	BASLINE VEHICLES FOR TESTING (MIV-VW)	07/30/82	09/30/82	0	0	27633	0
DTN422-82C-87427	AUTOMATED SCIENCES GROUP, INC.	TEST AND MAINTENANCE OF AARD CONTRACT CONTROL SYSTEM (CCN18)	06/05/82	12/31/83	0	0	95000	54000
DTN422-82C-17148	DYNAMIC SCIENCE, INC.	BOR-ELECTRIC VEHICLE TESTING---FMVSS 208	02/28/83	12/31/83	0	0	0	39482
DTN422-82C-21140	MOBILITY SYSTEMS AND EQUIPMENT COMPANY	VEHICLE BARRIER IMPACT TEST PROGRAM	06/17/83	09/30/83	0	0	0	58845
DTN422-82X-87203	FEDERAL HIGHWAY ADMINISTRATION	DOT/BUREAU OF CENSUS NATIONAL PERSONAL TRANSPORTATION SURVEY	02/18/83	09/30/83	0	0	250000	245000
DTN422-83A-87296	WRIGHT-PATTERSON AFB, AFAMRL/80M	VALIDATION OF COMPUTER PREDICTIONS OF DUMMY KINEMATICS DURING ROLLOVER ACCIDENTS	05/17/83	12/31/83	0	0	0	40000
DTN422-83C-32039	CALSPAN ADVANCED TECHNOLOGY CENTER	TESTING OF CHILD RESTRAINTS FOR USE ON AIRCRAFT FLIGHTS	07/25/83	08/01/84	0	0	0	27100
DTN422-83C-87001	ROHEO-KOJYO COMPANY, INC.	DRIVER AIR BAG FLEET DEMONSTRATION PROGRAM	06/30/83	09/30/84	0	0	0	457955
DTN422-83C-87002	SOUTHWEST RESEARCH INSTITUTE	OPERATION OF SOUTHERN ZONE CENTER "C" FOR NABS	04/30/83	04/11/86	0	0	0	450000
DTN422-83C-87003	DYNAMIC SCIENCE, INC.	OPERATION OF WESTERN ZONE CENTER "D" FOR NABS	04/30/83	04/11/86	0	0	0	450000
DTN422-83C-87005	UNIVERSITY OF MICHIGAN	DESIGN DEVELOPMENT, TEST AND EVALUATION OF AN ADVANCED ANTHROPOMORPHIC DUMMY	08/09/83	10/19/84	0	0	0	300000

F-27

ST COPY AVAILABLE

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-83C-07006	TEXAS TEST FLEET, INC.	AN EVALUATION OF VEHICLE FACTORS ON TIRE TREADWEAR	03/16/83	12/31/83	0	0	0	64876
DTNH22-83C-07008	JWK INTERNATIONAL CORPORATION	ADP SYSTEMS ANALYSIS AND PROGRAMMING SERVICES FOR FARS	02/28/83	02/28/85	0	0	0	110000
DTNH22-83C-07009	COMPUTER DATA SYSTEMS, INC.	ADP SYSTEMS ANALYSIS AND PROGRAMMING SERVICES FOR NASS	02/28/83	02/28/85	0	0	0	170300
DTNH22-83C-07011	CALSPAN CORPORATION	STUDY OF OCCUPANT IMPACT WITH VEHICLE INTERIOR SURFACES	02/28/83	12/31/84	0	0	0	120582
DTNH22-83C-07014	DUNLAP ASSOCIATES EAST, INC.	DETERRENCE VALUE OF TRADITIONAL DWI SANCTIONS	09/30/83	04/30/86	0	0	0	246757
DTNH22-83C-07023	ALLEN CORPORATION OF AMERICA	REPLACEMENT/REFRESHER TRAINING FOR THE NATIONAL ACCIDENT SAMPLING SYSTEM (NASS)	02/15/83	07/01/84	0	0	0	263775
DTNH22-83C-07024	KINTON INCORPORATED	DRIVER'S MANUAL FOR RETARDER EQUIPPED HEAVY DUTY TRUCKS	12/16/82	12/01/83	0	0	0	29117
DTNH22-83C-07049	AMAF, INC.	DATA CONTROL FOR THE FATAL ACCIDENT REPORTING SYSTEM	11/30/82	12/31/83	0	0	0	61394
DTNH22-83C-07095	UNIVERSITY OF MICHIGAN (UMTRI)	EVALUATION OF EXPERIMENTAL TECHNIQUES IN HEAD INJURY RESEARCH	02/28/84	07/01/85	0	0	0	00000
DTNH22-83C-07116	AUTOMATED SCIENCES GROUP, INC.	OVR DATA CENTER ANALYSIS AND PROCESSING SUPPORT	07/11/83	03/31/84	0	0	0	363115
DTNH22-83C-07139	KLD ASSOCIATES, INC.	PHASE I & II PSU FOR NASS ULSTER/SCHENECTADY	08/24/83	09/30/86	0	0	0	40000
DTNH22-83C-07140	KINLEY-HORN RESEARCH INSTITUTE, INC.	PHASE II PSU ST LOUIS	07/01/83	07/31/86	0	0	0	60000

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTN422-83C-87141	KIMLEY-HORN RESEARCH INSTITUTE, INC.	PSU'S FOR NASS - GENESEE - P84	06/30/83	09/30/84	0	0	0	60000
DTN422-83C-87142	BOODELL-GRIVAS, INC.	PHASE II PSU BERRIEN	07/01/83	07/31/86	0	0	0	60000
DTN422-83C-87143	KLD ASSOCIATES, INC.	PSU'S FOR NASS - BERGEN - P29	07/01/83	09/30/84	0	0	0	60000
DTN422-83C-87144	MANAGEMENT ENGINEERS, INC.	PSU'S FOR NASS - LACKAWANNA - P30	07/01/83	09/30/84	0	0	0	60000
DTN422-83C-87145	KIMLEY-HORN RESEARCH INSTITUTE, INC.	PHASE II PSU RUTHERFORD	07/01/83	07/31/83	0	0	0	60000
DTN422-83C-87146	MANAGEMENT ENGINEERS, INC.	PSU'S FOR NASS - OHAWA - P78	07/01/83	09/30/84	0	0	0	60000
DTN422-83C-87147	KIMLEY-HORN RESEARCH INSTITUTE, INC.	PHASE II PSU COLORADO	07/01/83	07/31/86	0	0	0	60000
DTN422-83C-87148	UNITED MANAGEMENT SYSTEMS	PHASE II PSU YUMA	07/06/83	07/31/86	0	0	0	60000
DTN422-83C-87149	KIMLEY-HORN RESEARCH INSTITUTE, INC.	PSU'S FOR NASS - CONTRA COSTA - P79	06/30/83	09/30/84	0	0	0	60000
DTN422-83C-87150	MANAGEMENT ENGINEERS, INC.	PHASE I & III PSU PHILADELPHIA/DELAWARE	08/24/83	07/31/86	0	0	0	40000
DTN422-83C-87151	KLD ASSOCIATES, INC.	PHASE I & III PSU NASS PHILADELPHIA/DELAWARE	08/24/83	07/31/86	0	0	0	40000
DTN422-83C-87154	UNIVERSITY OF MONTEVALLO	PHASE I & III PSU NASS SHELBY/TUSCALOOSA	08/24/83	07/31/86	0	0	0	40000
DTN422-83C-87159	KAPPA SYSTEMS, INC.	PHASE I & III PSU NASS SKAGIT/SEATTLE	08/24/83	09/30/86	0	0	0	40000
DTN422-83C-87176	WEBSTER-HEISE CORPORATION	COOPERATIVE AGREEMENT: NHTSA, CHRYSLER AND WEBSTER-HEISE CORPORATION	11/25/83	09/30/83	0	0	0	65450

E-29

TEST COPY AVAILABLE

BEST COPY AVAILABLE

E-30

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-83C-07187	UNIVERSITY OF MICHIGAN	EVALUATION OF THE FACTORS INFLUENCING HEAVY TRUCK DYNAMIC PERFORMANCE	09/30/83	03/31/86	0	0	0	193000
DTNH22-83C-07188	UNIVERSITY OF MICHIGAN-TRI	ANALYSIS OF ACCIDENT RATES OF HEAVY VEHICLES	05/31/83	01/25/85	0	0	0	98995
DTNH22-83C-07243	EBON RESEARCH SYSTEMS	MOTIVATION OF RESTRAINT SYSTEM USAGE AMONG SPECIFIC TARGET GROUPS	09/20/83	04/07/84	0	0	0	79790
DTNH22-83C-07247	COMBIS CORPORATION	NATIONAL ACCIDENT SAMPLING SYSTEM (NASS) FILE ANALYSIS 1982	02/15/83	12/31/83	0	0	0	99977
DTNH22-83C-07254	AUTOMATED SCIENCES GROUP, INC.	BIOMECHANICS DATA BASE MANAGEMENT	06/06/83	06/30/84	0	0	0	89955
DTNH22-83C-07258	CHI ASSOCIATES, INC.	CVS SIMULATIONS	05/31/83	05/20/84	0	0	0	157124
DTNH22-83C-07267	LAWRENCE JOHNSON AND ASSOCIATES	NASS WITHIN PSU SAMPLING METHODOLOGY	09/09/83	09/30/86	0	0	0	145528
DTNH22-83C-07276	TRAFFIC INSTITUTE OF NORTHWESTERN UNIV.	DETERRENCE VALUE OF ALTERNATIVE SANCTIONS FOR DWI	02/28/84	09/30/85	0	0	0	69434
DTNH22-83C-07278	PRISM CORPORATION	9TH ANNUAL FARS WORKSHOP	07/15/83	12/31/83	0	0	0	28560
DTNH22-83C-07281	WESTAT, INC.	NATIONAL ACCIDENT SAMPLING SYSTEM - ESTIMATION	09/28/83	09/30/84	0	0	0	111907
DTNH22-83C-07287	CENTER FOR THE ENVIRONMENT & MAN, INC.	SMALL CAR SAFETY STUDY	02/02/84	02/11/85	0	0	0	100000
DTNH22-83C-07294	CALSPAN FIELD SERVICES, INC.	MOTOR VEHICLE ACCIDENT INVESTIGATION TEAM - WASHINGTON, D.C.	01/13/84	09/30/84	0	0	0	54000

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-83C-87310	CHI ASSOCIATES, INC.	DATA ANALYSIS FOR QUALITY CONTROL	08/25/83	12/31/84	0	0	0	69501
DTNH22-83C-87322	TARRANCE AND ASSOCIATES	IMPACT OF TRAVEL PATTERNS AND DRIVING BEHAVIOR ON CRASH INVOLVEMENT	05/31/83	09/30/83	0	0	0	27500
DTNH22-83C-87323	NAT'L INST OF GOV'T PURCHASING, INC.	PUBLIC SECTOR AIR BAG PURCHASE SUPPORT	04/22/83	04/21/84	0	0	0	49061
DTNH22-83C-87324	ENTRE COMPUTER CENTER	PURCHASE OF SCIENTIFIC MICROCOMPUTER SYSTEM	06/29/83	07/15/83	0	0	0	44253
DTNH22-83C-87334	CARLOW ASSOCIATES, INC.	PHOTOMETRIC TESTS OF DAYTIME RUNNING LIGHTS	09/28/83	01/31/84	0	0	0	44943
DTNH22-83C-87360	UNIVERSITY OF MICHIGAN	MEASUREMENT OF CRASH AVOIDANCE CHARACTERISTICS OF VEHICLES IN USE	09/30/83	09/30/84	0	0	0	191044
DTNH22-83C-87366	OPPORTUNITY SYSTEMS, INC.	TECHNICAL SUPPORT FOR DATA ANALYSIS	06/15/83	12/31/84	0	0	0	32748
DTNH22-83C-87417	MCBINLEY MARKETING RESEARCH COMPANY, INC	DETECTION OF CHANGES IN SAFETY BELT KNOWLEDGE AND ATTITUDES: CARAVAN STUDY	09/11/83	12/30/84	0	0	0	75000
DTNH22-83C-87428	CAMELBACK AMC	VEHICLE PURCHASE FOR FRONTAL IMPACT - (12 @) 1983 RENAULT FUEGO	07/22/83	07/15/83	0	0	0	121693
DTNH22-83C-87429	CARL BURGER DODGE	VEHICLE PURCHASE FOR FRONTAL TESTING - (11 @) 1983 DODGE DAWI	07/22/83	07/15/83	0	0	0	74212
DTNH22-83C-87432	SAND MOTOR COMPANY	VEHICLE PURCHASE FOR FRONTAL TESTING - (7 @) 1983 CHEVROLET CELEBRITY	07/22/83	07/15/83	0	0	0	60844

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTNH22-83C-87452	AUTOMATED SCIENCES GROUP, INC.	ENHANCEMENT AND MAINTENANCE OF THE AARD/CCMIS SYSTEM	09/30/83	09/30/86	0	0	0	349198
DTNH22-83C-87461	VERVE RESEARCH CORPORATION	PRETEST AND REFINEMENT OF ITEMS FOR ALCOHOL HIGHWAY SAFETY SURVEYS	09/30/83	01/31/84	0	0	0	33696
DTNH22-83C-87494	AUTOMATED SCIENCES GROUP, INC.	MAINTENANCE OF BIOMECHANICS DATA BASE	09/28/83	12/31/84	0	0	0	140719
DTNH22-83C-17148	DYNAMIC SCIENCE, INC.	FRONTAL IMPACT CRASH TESTS INVOLVING ALTERNATIVE VEHICLE DESIGNS - PART II	08/17/83	12/31/83	0	0	0	374981
DTNH22-83C-27019	WAYNE STATE UNIVERSITY	THORACIC/ABDOMINAL TRAUMA FROM IMPACT WITH STEERING ASSEMBLY/INSTRUMENT PANEL	09/30/83	03/31/85	0	0	0	207737
DTNH22-83C-27403	ARIZONA DEPARTMENT OF PUBLIC SAFETY	PURCHASE 10 1982 FORD LTD W/POLICE PACKAGE FOR AIR BAG RETROFIT PROGRAM	07/28/83	05/30/83	0	0	0	50042
DTNH22-83C-47019	CALSPAN CORPORATION	THORACIC/ABDOMINAL TRAUMA FROM IMPACT WITH STEERING ASSEMBLY/INSTRUMENT PANEL	09/30/83	03/31/85	0	0	0	60000
DTNH22-83C-67019	UNIVERSITY OF HEIDELBERG	THORACIC/ABDOMINAL TRAUMA FROM IMPACT WITH STEERING ASSEMBLY/INSTRUMENT PANEL	09/30/83	03/31/85	0	0	0	117074
DTNH22-83F-07117	RELATIONAL TECHNOLOGY, INC.	PROCUREMENT OF INGRES DBMS FOR THE VAX 11/780 ***EXPEDITED***	02/25/83	09/30/83	0	0	0	29750
DTNH22-83F-57039	DIGITAL EQUIPMENT CORPORATION (DEC)	OPVA COMPUTER SYSTEM HARDWARE MAINTENANCE	11/04/82	09/30/83	0	0	0	33654

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
DTN42-83X-00004	TRANSPORTATION SYSTEMS CENTER	IA - TBC SMALL BUSINESS INNOVATION RESEARCH PROGRAM (SBIR)	07/18/83	09/30/83	0	0	0	30000
DTN42-83X-07358	FEDERAL HIGHWAY ADMINISTRATION	ROLLOVER CRASH TESTS FOR VALIDATION OF DUMMY KINEMATICS DURING ROLLOVER ACCIDENT	08/19/83	01/31/83	0	0	0	56958
DTN42-83X-07463	MICHIGAN STATE UNIVERSITY	MODELING AND PARTICIPATION: ELEMENTS IN EDUCATION TO REDUCE ALCOHOL-IMPAIRED DRI	09/30/83	09/30/86	0	0	0	92000
DTN42-83X-07464	UNIVERSITY OF ILLINOIS AT CHICAGO (RSPA)	MODEL PUBLIC HEALTH COURSE IN VEHICLE RELATED TRAUMA: PREVENTIVE INTERVENTION	09/13/83	09/30/84	0	0	0	68176
DTN42-83X-07466	UNIVERSITY OF GEORGIA	NEW EDUCATIONAL MEANS FOR TEACHING ADOLESCENTS ABOUT ALCOHOL	02/23/84	09/15/86	0	0	0	43400
DTN42-83X-07467	UNIVERSITY OF TEXAS (RSPA)	SCHOOL BASED PROGRAM TO INCREASE THE USE OF SAFETY BELTS AMONG ADOLESCENTS	08/23/83	08/04/85	0	0	0	67000
PPA-HS-017	TRANSPORTATION SYSTEM CENTER	ENGINEERING SUPPORT/INTEGRATED VEHICLE SYSTEMS	05/07/80	09/30/80	300000	0	0	0
PPA-HS-028	TRANSPORTATION SYSTEMS CENTER	IMPLEMENTATION OF INNOVATION - M/V INDUSTRY	01/31/80	09/30/80	120000	0	0	0
PPA-HS-029	TRANSPORTATION SYSTEMS CENTER	TRUCK AND BUS FUEL ECONOMY	06/18/80	09/30/80	275100	0	0	0
PPA-HS-117	TRANSPORTATION SYSTEMS CENTER	ENGINEERING SUPPORT/INTEGRATED VEHICLE SYSTEMS	03/09/81	09/30/81	0	211500	0	0
PPA-HS-128	TRANSPORTATION SYSTEMS CENTER	IMPLEMENTATION OF INNOVATION - M/V INDUSTRY	07/29/81	09/30/81	0	1690500	0	0

E-33

BEST COPY AVAILABLE

BEST COPY AVAILABLE

E-34

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
PPA-HS-134	TRANSPORTATION SYSTEMS CENTER	ALCOHOL COUNTERMEASURES SUPPORT	03/09/81	09/30/81	0	35000	0	0
PPA-HS-135	TRANSPORTATION SYSTEMS CENTER	COMPUTER SUPPORT	03/09/81	09/30/81	0	125000	0	0
PPA-HS-136	TRANSPORTATION SYSTEMS CENTER	U.S. VEHICLE REGISTRATION DATA	03/09/81	09/30/81	0	73000	0	0
PPA-HS-151-157	TRANSPORTATION SYSTEMS CENTER	AUTOMOTIVE FUEL ECONOMY - TECHNOLOGY ASSESSMENT	03/25/81	09/30/81	0	2390000	0	0
PPA-HS-167	TRANSPORTATION SYSTEM CENTER	TECHNICAL INFORMATION--NCSA	03/09/81	09/30/81	0	100000	0	0
PPA-HS-168	TRANSPORTATION SYSTEMS CENTER	U.S. MOTOR VEHICLE SAFETY INFORMATION SYSTEM	03/09/81	09/30/81	0	130000	0	0
PPA-HS-169	TRANSPORTATION SYSTEMS CENTER	TRANSPORTATION INFORMATION	03/09/81	09/30/81	0	100000	0	0
PPA-HS-283	TRANSPORTATION SYSTEMS CENTER	FINITE ELEMENT ANALYSIS OF ROLLING TIRES	10/31/83	09/30/82	0	0	100000	0
PPA-HS-292	TRANSPORTATION SYSTEMS CENTER	PEDESTRIAN/BICYCLIST /PUPIL TRANSPORTATION	03/03/82	09/30/84	0	0	211110	0
PPA-HS-301	TRANSPORTATION SYSTEMS CENTER	EVALUATION OF PROPRIETARY DEVICE	06/17/83	09/30/83	0	0	0	294000
PPA-HS-302	TRANSPORTATION SYSTEMS CENTER	MOTOR VEHICLE SAFETY CHARACTERISTICS	07/19/83	09/30/83	0	0	0	150000
PPA-HS-303	TRANSPORTATION SYSTEMS CENTER	HIT AUTO PROJECT	06/17/83	09/30/83	0	0	0	100000
PPA-HS-334	TRANSPORTATION SYSTEMS CENTER	ALCOHOL COUNTERMEASURES SUPPORT--SHARED BY TSP(2339AC)	06/17/83	09/30/83	0	0	0	75000
PPA-HS-336	TRANSPORTATION SYSTEMS CENTER	US VEHICLE REGISTRATION DATA BASE PROJECT	06/17/83	09/30/83	0	0	0	100000

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
PPA-HS-367	TRANSPORTATION SYSTEMS CENTER	SUPPORT TO NATL CTR FOR STAT & ANALYSIS	06/17/83	09/30/83	0	0	0	255000
PPA-HS-368	TRANSPORTATION SYSTEMS CENTER	U.S. MOTOR VEHICLE SAFETY INFORMATION SYSTEM	06/17/83	09/30/83	0	0	0	100000
PPA-HS-370	TRANSPORTATION SYSTEMS CENTER	EXPOSURE ANALYSIS	06/17/83	09/30/83	0	0	0	429000
PPA-HS-371	TRANSPORTATION SYSTEMS CENTER	INFORMATION SYSTEMS EVALUATION	06/17/83	09/30/83	0	0	0	350000
PPA-HS-376	TRANSPORTATION SYSTEMS CENTER	OCCUPANT MODELING	06/17/83	09/30/83	0	0	0	1053000
PPA-HS-385	TRANSPORTATION SYSTEMS CENTER	DWI COUNTERMEASURES	06/17/83	09/30/83	0	0	0	47000
PPA-HS-388	TRANSPORTATION SYSTEMS CENTER	HAN LOOP PERFORMANCE MEASUREMENT REQUIREMENTS	06/17/83	09/30/83	0	0	0	30000
PPA-HS-390	TRANSPORTATION SYSTEMS CENTER	HEAVY DUTY VEHICLE BRAKE SYSTEMS	06/17/83	09/30/83	0	0	0	66000
PPA-HS-394	TRANSPORTATION SYSTEMS CENTER	RAPID ALCOHOL RESEARCH EXPERIMENTS	06/17/83	12/21/82	0	0	0	300000
PPA-HS-397	TRANSPORTATION SYSTEMS CENTER	HEAVY TRUCK SAFETY ANALYSIS	06/17/83	09/30/83	0	0	0	50000
PPA-HS-398	TRANSPORTATION SYSTEMS CENTER	INFORMATION REPORTING AND DISTRIBUTION	06/17/83	09/30/83	0	0	0	150000
PPA-HS-399	TRANSPORTATION SYSTEMS CENTER	SAFETY BELT SUPPORT - INCLUDES FY82 C/O FROM PPA-HS-386, PPA-HS-387	06/17/83	09/30/83	0	0	0	175000
R4842310	U.S. GOV'T PRINTING OFFICE	BILL OF LADING	07/01/80	07/10/80	20700	0	0	0
RD-583-2	VEHICLE RESEARCH AND TEST CENTER	AIRBAG DEMONSTRATION PROGRAM (TESTING)	03/01/80	09/30/84	0	0	0	97013
RD380-1	VEHICLE RESEARCH AND TEST CENTER	HEAVY TRUCK FUEL ECONOMY	05/21/80	09/30/83	60453	0	0	0

E-35

BEST COPY AVAILABLE

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
RD388-2	TRC OF OHIO	TRANSIT BUS FUEL ECONOMY	07/07/80	09/30/82	59939	0	0	0
SRL-15	VEHICLE RESEARCH AND TEST CENTER	AIR BRAKE RESEARCH - SRL-5	03/01/80	09/30/84	147309	0	0	104164
SRL-12	VEHICLE RESEARCH AND TEST CENTER	EVALUATION OF SIDE IMPACT DUMMY	04/21/80	09/30/80	92689	0	0	0
SRL-17	VEHICLE RESEARCH AND TEST CENTER	SIDE IMPACT SLED AND PADDING DEVELOPMENT	01/19/82	09/30/82	31017	0	1400	0
SRL-19	TO TRANS RESEARCH CENTER OF OHIO-SRL-19	TRAJECTORIES OF SMALL UNRESTRAINED CHILDREN	12/26/79	09/30/82	29099	0	0	0
SRL-20	VEHICLE RESEARCH AND TEST CENTER	VEHICLE AGGRESSIVENESS AND COMPACTIBILITY	05/15/80	09/30/81	31574	220709	0	0
SRL-26	VEHICLE RESEARCH AND TEST CENTER -TAC-	LIGHT TRUCK SIDE STRUCTURE EVALUATION	12/29/81	09/30/82	0	444604	0	0
SRL-27	VEHICLE RESEARCH AND TEST CENTER -TAC-	SIDE IMPACT PADDING INTEGRATION	08/04/80	09/30/81	43312	0	0	0
SRL-28	VEHICLE RESEARCH AND TEST CENTER -OSU-	PEDESTRIAN RULEMAKING EXPLORATORY - PEDESTRIAN IMPACT MODEL	12/04/81	09/30/82	0	72772	0	0
SRL-32	VEHICLE RESEARCH AND TEST CENTER	FOUNDATION BRAKE RESEARCH - SRL-32	09/30/81	09/30/84	0	0	23023	09191
SRL-34	VEHICLE RESEARCH AND TEST CENTER	HYDRAULIC BRAKE RESEARCH PROGRAM - HEAVY DUTY VEHICLE - SRL-34	09/30/81	09/30/84	0	0	0	77768
SRL-36	VEHICLE RESEARCH AND TEST CENTER	THORAX IMPACT SIMULATOR - SRL-36	09/30/81	09/30/84	0	37421	0	110007

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
SRL-39	VEHICLE RESEARCH AND TEST CENTER	PEDESTRIAN ACCIDENT RECONSTRUCTION II - SRL-39	09/30/81	09/30/84	0	62984	0	19879
SRL-40	VEHICLE RESEARCH AND TEST CENTER	ANALYSIS AND RECONSTRUCTION OF CADAVER TESTS - SRL-40	09/30/81	09/30/84	0	86153	0	37618
SRL-42	VEHICLE RESEARCH AND TEST CENTER	DUMMY MANAGEMENT PROGRAM - SRL-42	09/30/81	09/30/84	0	0	0	196755
SRL-46	TRC OF DMIO-SRL-46	DYNAMIC TESTING FOR IMPROVEMENT OF COMPUTER SIMULATION MODEL	09/30/81	09/30/84	0	57100	0	0
SRL-49	VEHICLE RESEARCH AND TEST CENTER	TESTS OF GLAZING MATERIALS - SRL-49	09/30/81	09/30/84	0	0	0	36239
SRL-51	VEHICLE RESEARCH AND TEST CENTER	RESTRAINT MODEL VALIDATION TESTS - PHASE I - SRL-51	09/30/81	09/30/84	0	0	0	45646
SRL-54	VEHICLE RESEARCH AND TEST CENTER	HEAVY DUTY VEHICLE HANDLING - SRL-54	09/30/81	09/30/84	0	0	0	64440
SRL-59	VEHICLE RESEARCH AND TEST CENTER	PRELIMINARY DEVELOPMENT - HEAD/NECK SIMULATOR	09/30/81	09/30/84	0	0	0	125154
SRL-66	VEHICLE RESEARCH AND TEST CENTER	SIDE INTERIOR STIFFNESS PROPERTIES	09/30/81	09/30/84	0	0	0	96634
SRL-73	VEHICLE RESEARCH AND TEST CENTER	RECONSTRUCTION AND ANALYSIS OF HEAD/NECK TRAUMA - SRL-73	09/30/81	09/30/84	0	0	0	115240
SRL-76	VEHICLE RESEARCH AND TEST CENTER	PEDESTRIAN MATHEMATICAL MODEL (2D AND 3D) - SRL-76	09/30/81	09/30/84	0	0	0	200374
SRL-77	VEHICLE RESEARCH AND TEST CENTER	DEEP - HYBRID III	09/30/81	09/30/84	0	0	0	90039

E-37

BEST COPY AVAILABLE

BEST COPY AVAILABLE

CONTRACT NUMBER	CONTRACTOR	TITLE	START DATE	END DATE	FY80	FY81	FY82	FY83
SRL-78	VEHICLE RESEARCH AND TEST CENTER	BID DESIGN MODIFICATIONS - SRL-78	09/30/81	09/30/84	0	0	0	43332
SRL-81	VEHICLE RESEARCH AND TEST CENTER	HARMONIZATION OF BRAKING STANDARDS - PHASE III - SRL-81	09/30/81	09/30/84	0	0	0	43187
** TOTAL **					24252323	23833989	17943847	27765493

E-38

U.S. GOVERNMENT PRINTING OFFICE: 1985-481-816/20072